

PROJECT TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

01005 PROJECT WORK REQUIREMENTS AND RESTRICTIONS
01012 DESIGN AFTER AWARD
01111 SAFETY AND HEALTH REQUIREMENTS
01200 PROJECT MEETINGS
01312 QUALITY CONTROL SYSTEM (QCS)
01321N DESIGN-BUILD NETWORK ANALYSIS SCHEDULES (NAS)
01330 SUBMITTAL PROCEDURES
01355 ENVIRONMENTAL PROTECTION
01451A CONTRACTOR QUALITY CONTROL
01500 TEMPORARY CONSTRUCTION FACILITIES
01572 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT
01670 RECYCLED / RECOVERED MATERIALS
01720 AS-BUILT RECORD DRAWINGS AND SHOP DRAWINGS
01780 CLOSEOUT SUBMITTALS
01850 CONTRACT DRAWINGS

DIVISION 02 - SITE WORK

02220 DEMOLITION

DIVISION 13 - SPECIAL CONSTRUCTION

13280A ASBESTOS ABATEMENT
13281A LEAD HAZARD CONTROL ACTIVITIES
13286N HANDLING OF LIGHTING BALLASTS AND LAMPS CONTAINING PCBs AND MERCURY

-- End of Project Table of Contents --

SECTION 01005

PROJECT WORK REQUIREMENTS AND RESTRICTIONS

PART 1 GENERAL

1.1 DEFINITIONS

- a. Facility: The facility is Ft Pickett, Virginia.
- b. CO: Contracting Officer or his authorized representative.
- c. VaANG: Virginia Army National Guard

1.2 SPECIAL CONTRACTOR REQUIREMENTS

1.2.1 Performance period

The Contractor shall be required to phase the work such that the requirements shown in the Statement of Work are met. The performance period shown in the contract documents represents the total time available to the contractor for design and construction activities.

1.3 COOPERATION WITH USING AGENCY AND OTHER CONTRACTORS

During the period of this contract, other contracts may be in force for the construction of other features of work on or adjacent to the site of work being accomplished under this contract. It shall be the responsibility of the Contractor on this contract to be fully informed of the extent of the limits of work to be performed by other Contractors. Should there be any conflict between these limits, it shall be brought to the attention of the Contracting Officer(CO)and the CO's decision shall be final. Also, prior to completion of work under this contract, members of the Using Agency may be performing work or occupying facilities on or adjacent to the area. The Contractor shall arrange his plant and shall schedule and perform this work so as to effectively cooperate with all other Contractors and Government agencies.

1.4 PERSONNEL RESTRICTIONS

Personnel are limited to the immediate site areas and shall not enter buildings or facilities not involved in the work. All employees of the Contractor will be subject to all rules and regulations of the Facility which pertain to personnel. The Contractor shall erect fences and signs as specified and be responsible for the restrictions of all personnel. The Contractor's plans for restricting personnel access to the project site shall be submitted for approval as a part of the Safety Plan (Accident Prevention Plan).

1.5 TRANSPORTATION FACILITIES

The Facility is served by an all weather surfaced road network. Road(s) within the Facility proposed to be used by the Contractor shall be subject to prior approval of the Facility authorities and such roads, if used, shall be maintained throughout construction and shall be restored to as good condition as existed prior to their use. The Contractor shall also construct, subject to approval, such temporary haul roads and bridges as may be necessary for conducting his work. Any such temporary construction shall be removed and the affected area restored to its original condition.

All costs for the use of existing transportation facilities, for the construction of temporary facilities, and for maintenance, repair, removal and restoration shall be borne by the Contractor.

1.5.1 Use of Roads

Hard-surfaced roads from U.S. Highway 40 serves the Installation. The movement of all vehicles within the Facility shall be confined to the roads designated and shall comply with traffic regulations within the Facility. The Contractor shall keep all roads clear of all obstructions and free of mud and other foreign materials resulting from operations. The Contractor's vehicles shall at no time follow a vehicle closer than 50 feet, and all vehicles shall pull off the road and come to a complete stop when meeting military heavy equipment, military fighting vehicles, or vehicles with flashing lights. Facility speed limits and traffic controls shall be observed.

1.5.2 Cleated Vehicles

Cleated vehicles shall not be moved over surfaced roads except at the immediate site of the area where they are to be used.

1.5.3 Road Restrictions

The movement of all vehicles within the Facility shall be confined to the roads designated and shall comply with traffic regulations within the Facility. Other roads may be used only with the approval of the CO.

1.6 COORDINATION IN WORK AREAS

1.6.1 Occupied Work Area

The area where work is to be accomplished will be occupied during the work. Activities of the occupants of the scheduled work area shall not be interrupted or hampered in any way without prior written approval of the Contracting Officer.

1.6.2 Maintenance of Utilities

Any active utilities, including but not limited to electricity, gas, water, sewer, heating, air conditioning, or any like service, that will require interruption or replacement in any occupied area affected as a result of the Contractors scheduled work activities, shall be temporarily provided by the Contractor at his own expense until the affected service is fully and permanently restored. All temporary method(s) of service replacement the Contractor proposes for use on this contract shall be approved by the CO prior to commencing the work.

1.6.4 Hours of Work

The normal work hours for construction shall be from 7:00am to 4:30 p.m., Monday through Friday of each week excluding Federal Holidays. Construction activities on Federal Holidays shall be limited to areas outside the secured (fenced) areas. Any request to change these hours shall be made in writing to the Contracting Officer at least two calendar days prior to the desired day on which the change is to go into effect. The changed hours shall not go into effect until written permission has been received from the Contracting Officer.

1.6.3 Existing Utility Location

Existing utilities must be located before doing any digging work on Facility. The Contractor shall be responsible to contact Miss Utility, obtain all necessary existing utility locations, which may be necessary to accomplish his work, and mark any utility lines in the immediate vicinity of his work.

1.6.4 Digging Permits

Contractor is responsible for obtaining all digging permits, including associated locating and marking services, in accordance with installation and local requirements, at no additional cost to the Government.

1.7 INTERRUPTIONS OF UTILITIES

1.7.1 Approval

Utility services shall not be interrupted by the Contractor to relocate, make connections, or interrupt for any purpose, without written approval of the CO and the respective utility owner. Water approval shall be obtained from the Town of Blackstone Utility Department. Electrical approval shall be obtained from Southside Electric Cooperative.

1.7.2 Request

Request for permission to shut down services shall be submitted in writing to the CO not less than 10 calendar days prior to date of proposed interruption. The request shall give the following information:

- a. Nature of Utility (Water, Elec, etc.)
- b. Size of line and location of shutoff.
- c. Buildings and services affected.
- d. Hours and date of shutoff.
- e. Estimated length of time service will be interrupted.

1.7.3 Service Interruptions

Services shall not be shut off until receipt of approval of the proposed hours and date from the Contracting Officer.

1.7.4 Timely Disconnections

Shutoffs which will cause interruption of Government work operations as determined by the Contracting Officer shall be accomplished during regular non-work hours or non-work days of the Using Agency without any additional cost to the Government.

1.7.5 Utilities Operation

Water - Operation of valves on water mains shall be by the Town of Blackstone personnel. Where shutoff of water lines interrupts service to fire hydrants or fire sprinkler systems, the Fort Pickett Fire Department shall be notified in writing 72 hours prior to the proposed interruption.

Electric - Electrical distribution activities shall be performed by Southside Electrical Cooperative.

1.8 PHYSICAL DATA

The physical conditions indicated on the drawings and in the specifications are the result of site visits, and surveys and borings. See Section 01055 SOIL BORING DATA for boring logs and data.

1.9 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the Contract Clause entitled "Default: (Fixed Price Construction)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

- a. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
- b. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

1.9.1 Schedule

The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY WORK DAYS BASED ON (5) DAY WORK WEEK

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
10	9	9	6	8	7	8	7	6	5	7	9

1.9.2 Records

Upon acknowledgement of the Notice to Proceed and continuing throughout the contract, the Contractor will record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day.

1.9.3 Impacted Days

The number of actual adverse weather days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day in each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in the schedule

of monthly anticipated adverse weather delays, above, the contracting officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the Contract Clauses entitled "Default (Fixed Price Construction)".

1.10 SITE CONTAMINATION

This site is designated a Category II site and is defined as a current or former industrial site or other hazard producing activity site which is perceived to be a clean location; however, due to former industrial or other activities within or near the site, it has the potential for contamination.

1.10.1 Contamination Removal

In the event that contamination beyond that shown or specified is encountered, the Contracting Officer shall be advised immediately. The contamination shall be removed as directed and replaced with satisfactory material. Payment therefore will be made in conformance with the CHANGES clause of the CONTRACT CLAUSES.

1.10.2 Compliance Requirements

The Contractor shall comply with applicable Federal, state and local laws, codes, ordinances and regulations (including the obtaining of licenses and permits) in connection with any hazardous material, substance or waste.

1.10.3 Requirements

The requirements of this clause and any act or failure to act by the Government shall not relieve the Contractor of any responsibility or liability for the safety of Government, Contractor or subContractor personnel or property.

1.11 WORK IN QUARANTINED AREA

The work called for by this contract involves activities in counties quarantined by the Department of Agriculture to prevent the spread of certain plant pests which may be present in the soil. The Contractor agrees that all construction equipment and tools to be moved from such counties shall be thoroughly cleaned of all soil residues at the construction site with water under pressure and that hand tools shall be thoroughly cleaned by brushing or other means to remove all soil. In addition, if this contract involves the identification, shipping, storage, testing, or disposal of soils from such a quarantined area, the Contractor agrees to comply with the provisions of ER 1110-1-5 and attachments, a copy of which will be made available by the Contracting Officer upon request. The Contractor agrees to assure compliance with this obligation by all subContractors.

1.13 HISTORICAL AND ARCHAEOLOGICAL FINDS

Federal legislation provides for the protection, preservation, and collection of scientific, prehistorical, historical, and archaeological data, including relics and specimens which might otherwise be lost due to alteration of the terrain or building features as a result of any Federal construction project. Should the Contractor, or any of the Contractor's

employees, or parties operating or associated with the Contractor, in the performance of this contract discover evidence of possible scientific, prehistorical, historical, or archaeological data, the Contractor shall immediately cease work at that location and notify the Contracting Officer, giving the location and nature of the findings. The Contractor shall forward written confirmation to the Contracting Officer as directed. The Contractor shall exercise care so as not to disturb or damage artifacts or fossils uncovered during excavation operations, and shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition. Any person who, without permission, injures, destroys, excavates, appropriates, or removes any historical or prehistorical artifact, object of antiquity, or archaeological resource on the public lands of the United States is subject to arrest and penalty of law. Where appropriate by reason of discovery, the Contracting Officer may order delays in the time of performance or changes in the work, or both. If such delays or changes are ordered, an equitable adjustment will be made in the contract in accordance with the applicable clauses of the contract.

1.12 EQUIPMENT-IN-PLACE LIST:

The Contractor shall maintain a list of equipment installed under the terms of the contract. In the event that the contract includes more than one building or facility, a list must be maintained for each and delivered to the Contracting Officer upon acceptance of each building or facility. Forms to be used for this purpose shall be obtained from the Area Engineer's Office. The list shall include the following:

- a. Contract number
- b. Description of item
- c. Model number
- d. Serial number
- e. Capacity
- f. Name of manufacturer
- g. Address of manufacturer
- h. Condition of item
- i. Replacement cost
- j. Name of person who checked item

1.13 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE

1.13.1 Allowable Costs

Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a Contractor or subContractor at any tier shall be based on actual cost data when the Government can determine both ownership and operating costs for each piece of equipment or equipment groups of similar serial and series from the Contractor's accounting records. When both ownership and operating costs cannot be determined from the Contractor's accounting records, equipment costs shall be based upon the applicable provisions of EP 1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule," Region II. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the Contracting Officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retrospective pricing, the schedule in effect at the time the work was performed shall apply.

1.13.2 Rental Costs

Equipment rental costs are allowable, subject to the applicable provisions of the Federal Acquisition Regulations, and shall be substantiated by certified copies of paid invoices. Rates for equipment rented from an organization under common control, lease-purchase or sale-leaseback arrangements will be determined using the schedule except that rental costs leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees are allowable. Costs for major repairs and overhaul are unallowable.

1.13.3 Equipment Costs

When actual equipment costs are proposed and the total amount of the pricing action is over \$25,000, cost or pricing data shall be submitted on the Standard Form 1411, "Contract Pricing Proposal Cover Sheet". By submitting cost or pricing data, the Contractor grants to the Contracting Officer or an authorizing representative the right to examine those books, records, documents and other supporting data that will permit evaluation of the proposed equipment costs. After price agreement the Contractor shall certify that the equipment costs or pricing data submitted are accurate, complete and current.

1.14 SUBCONTRACTS AND WORK COORDINATION

Contract Clauses "SUBCONTRACTS", "PERMITS AND RESPONSIBILITIES", and "MATERIAL AND WORKMANSHIP" are supplemented as follows:

- a. Divisions or sections of specifications are not intended to control the Contractor in dividing the work among subContractors, or to limit work performed by any trade.
- b. Contractor shall be responsible for coordination of the work of the trades, subContractors, and materials.
- c. The Government or its representative will not undertake to settle any difference between the Contractor and Contractor's subContractors, or between subContractors.
- d. The Government reserves the right to refuse to permit employment on the work or require dismissal from the work of any subContractor who, by reason of previous unsatisfactory work on Corps of Engineers projects, or for any other reason is considered by the Contracting Officer to be incompetent or otherwise objectionable.

1.15 CONSTRUCTION MANPOWER AND EQUIPMENT REPORT

The Contractor shall submit executed CENAO Form 987, Construction Manpower and Equipment Report daily. The report shall include manpower and equipment for the general and subContractors. Forms are available from the Contracting Officer.

1.16 PURCHASE ORDERS

To ensure proper expediting of orders the Contractor and his subContractors shall furnish to the Contracting Officer, one copy of each purchase order covering supplies or services required for performance of the work. Each purchase order shall clearly indicate the date of placement, the date

delivery is required in order to avoid delay in the scheduled progress of the work, and the date delivery is promised by the supplier or producer. Copies of purchase orders shall be forwarded on the date issued.

1.17 PROFIT

1.17.1 Weighted Guidelines

Weighted guidelines method of determining profit shall be used on any equitable adjustment change order or modification issued under this contract. The profit factors shall be as follows:

Factor	Rate	Weight	Value
Degree of Risk	20		
Relative difficulty of work	15		
Size of Job	15		
Period of performance	15		
Contractor's investment	05		
Assistance by Government	05		
Subcontracting	<u>25</u>		
	100		

1.17.2 Value

Based on the circumstances of each procurement action, each of the above factors shall be weighted from .03 to .12 as indicated below. The value shall be obtained by multiplying the rate by the weight. The value column when totalled indicates the fair and reasonable profit percentage under the circumstances of the particular procurement.

1.17.2.1 Degree of Risk

Where the work involves no risk or the degree of risk is very small, the weighting should be .03; as the degree of risk increases, the weighting should be increased up to a maximum of .12. Lump sum items will have, generally, a higher weighted value than the unit price items for which quantities are provided. Other things to consider: the portion of the work to be done by subContractors, nature of work, where work is to be performed, reasonableness of negotiated costs, amount of labor included in costs, and whether the negotiation is before or after performance of work.

1.17.2.2 Relative Difficulty of Work

If the work is most difficult and complex, the weighting should be .12 and should be proportionately reduced to .03 on the simplest of jobs. This factor is tied in to some extent with the degree of risk. Some things to consider: the nature of the work, by whom it is to be done, where, and what is the time schedule.

1.17.2.3 Size of Job

All work not in excess of \$100,000 shall be weighted at .12. Work estimated between \$100,000 and \$5,000,000 shall be proportionately weighted from .12 to .05.

1.17.2.4 Periods of Performance

Jobs in excess of 24 months are to be weighted at .12. Jobs of lesser duration are to be proportionately weighted to a minimum of .03 for jobs not to exceed 30 days. No weight where additional time not required.

1.17.2.5 Contractor's Investment

To be weighted from .03 to .12 on the basis of below average, average, and above average. Things to consider: amount of subcontracting, mobilization payment item, Government furnished property, equipment and facilities, and expediting assistance.

1.17.2.6 Assistance by Government

To be weighted from .12 to .03 on the basis of average to above average. Things to consider: use of Government owned property, equipment and facilities, and expediting assistance.

1.17.2.7 Subcontracting

To be weighted inversely proportional to the amount of subcontracting. Where 80 percent or more of the work is to be subcontracted, the weighting is to be .03 and such weighting proportionately increased to .12 where all the work is performed by the Contractor's own forces.

1.18 BLASTING

Blasting will not be permitted.

PART 2 PRODUCTS (THIS PART NOT USED)

PART 3 EXECUTION (THIS PART NOT USED)

-- End of Section --

SECTION 01012
DESIGN AFTER AWARD

1.0 GENERAL

1.1 The Contractor shall propose a schedule for the number and composition of the design submittal phases. As a minimum, design submittals are required at the preliminary (50%), final (100%), and at the design complete stage. The requirements of each design stage are listed hereinafter. The Contractor shall reflect the number and schedules for the design submittals phases in the progress charts. As a maximum, the 50%, 100%, and design complete submittals shall each be made in one consolidated package which includes each of the major categories listed in paragraph "Contents of Design Submittals".

1.2 To facilitate fast-track design-construction activities the contractor shall submit a 100% Site/Utility Design as the first design submittal. Following review, resolution, and incorporation of all Government comments, and submittal of a satisfactory set of site/utility design documents, the Norfolk District may allow the contractor to proceed with site development activities within the parameters set forth in the accepted design submittal. Submittal review, comment, and resolution times from this specification apply to all Design Submittals. No on-site construction activities shall begin prior to receipt of a construction NTP by the contractor.

2.0 DESIGNER OF RECORD

The Contractor shall identify, for approval, the Designer of Record for each area of work. One Designer of Record may be responsible for more than one area. All areas of design disciplines shall be accounted for by a licensed, registered Professional Engineer or Architect. The Designer(s) of Record shall stamp, sign, and date all design drawings under their responsible discipline at each design submittal stage.

3.0 DEFINITION OF DESIGN SUBMITTALS

3.1 First Site/Utility Design Submittal (100%). This submittal is provided to allow the contractor to concentrate initial efforts for the site/utility portions of the project. By allowing this work to be separated, the contractor is given the opportunity to fast track and begin construction on the site/utility work prior to completion of the building designs. This submittal shall consist of the following:

3.1.1 Design analysis, developed to 100%, site work and utility work only.

3.1.2 100% complete site/utility drawings

3.1.3 Final site/utility specifications

3.1.4 Environmental permits, as required. When environmental permits are

not required, the Contractor shall provide a statement with justification to that effect.

3.1.5 Contractor prepared site specific geotechnical report and analyses.

3.2 Preliminary Conformance - 50% Building Submittal. This submittal is intended to insure that the contractors design is proceeding in accordance with the terms of the solicitation and the contractor's original proposal as well as in a timely manner. This submittal shall consist of the following:

3.2.1 Design analysis, developed to 50%

3.2.2 50% complete drawings

3.2.3 Draft specifications

3.2.4 Site Utility design information need not be included in this submittal package except where interface to the interior building systems is required.

3.3 Final Design - 100% Building. The review of this submittal is to insure that the design is in accordance with directions provided the Contractor during the design process as well as the original solicitation and the contractor's proposal. The Contractor shall submit the following documents for Final Design Review:

3.3.1 50% review comments and responses.

3.3.2 The Design Analysis submitted for Final Design Review shall be in its final form. The Design Analysis shall include all backup material previously submitted and revised as necessary. All design calculations shall be included. The Design Analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the Final Drawings and Specifications.

3.3.3 The Contract Drawings submitted for Final Design Review shall include the drawings previously submitted which have been revised and completed as necessary. The Contractor is expected to have completed all of his coordination checks and have the drawings in a design complete condition. The drawings shall be complete at this time including the incorporation of any design review comments generated by the previous design reviews. The drawings shall contain all the details necessary to assure a clear understanding of the work throughout construction. Shop drawings will not be considered as design drawings. All design shall be shown on design drawings prior to submittal of shop drawings.

3.3.4 The Draft Specifications on all items of work submitted for Final Design Review shall consist of legible marked-up specification sections.

3.3.5 Site Utility design information need not be included in this submittal package except where interface to the interior building systems is required.

3.4 Design Complete Submittal. After the Final Design Review, the Contractor shall revise the Contract Documents by incorporating any

comments generated during the Final Design Review and shall prepare final hard copy Contract Specifications. The Contractor shall submit the following documents for the design complete submittal:

3.4.1 Design analysis, in final 100% complete form. (Site & Buildings)

3.4.2 100% complete drawings. (Site & Buildings)

3.4.3 Final specifications (Site & Buildings)

3.4.4 Final review comments and responses. (ALL)

3.4.5 Electronic Submission: All CADD files in native AutoCAD format, as well as all prepared technical specifications shall be provided on CD-ROM. Two copies are required.

3.5 Structural Interior Design.

3.5.1 Definition: The Structural Interior Design (SID) shall involve the selection and sampling of all applied finishes including material, color, texture and patterns necessary to complete the building's interior architectural features. This information shall be submitted in 3" D-ring binders, 8-1/2" x 11" format.

3.5.2 Present architectural finish samples in an orderly arrangements according to like rooms/areas receiving like finishes. Each like room receiving like finishes will be noted as a Color Scheme. Each Color Scheme shall have a written description of material used. This written description shall use the same material abbreviations and notes that appear on the Room Finish Schedule and Legend in the contract drawings. Submit the SID binders concurrently with the architectural design submittals.

3.5.3 Preliminary Submittals: The Contractor shall submit three complete sets of the initial SID package. The design philosophy shall use a warm neutral background color with appropriate accent colors. All SID proposals shall be reviewed and approved by the Government. The Interior Designer shall revise the SID binders after each review and update the SID to satisfy review comments. Each submittal will follow this method of review until the Government approves the completed SID package.

3.5.4 Final Submittal: After approval of the Preliminary Submittal, the Contractor shall submit three (3) complete sets of the approved and final Structural Interior Design package. Once the Contractor has submitted the SID and the Government has approved the submittal, all materials, finishes, colors, textures and pattern submitted and approved for this project are then considered as part of the contract and the Contractor shall furnish all approved SID finishes. No deviations will be considered.

3.5.5 Format: Submit all SID information and samples on 8 1/2"x 11" modules with only one foldout. The maximum foldout width shall be approximately 25 inches. No foldouts on the top or bottom of the pages. Place the project title, base, architectural firm, page number and date on the bottom of each page or module.

3.5.5.1 The module shall support and anchor all samples. Anchor large or heavy samples with mechanical fasteners, velcro or double sided foam tape. Rubber cement or glue will not be acceptable.

3.5.5.2 Assemble the 8 1/2" x 11" pages and modules in a 3" D-ring binder. Holes for placement of the modules in the binder shall be 3/8" in diameter. Each binder shall be identified on the outside spine and front cover by title, project number, percentage phase and date.

3.5.5.3 Material and finish samples shall indicate true pattern, color and texture. Carpet samples shall be large enough to indicate a complete pattern or design.

3.5.5.4 Where paint manufacturers color names and numbers are used indicated the finish of the paint such as gloss, semi-gloss, flat and so on.

3.5.5.5 Signage may include emblems, striping, letters, numbers and logos. The interior designer shall consider visual appearance, organization, location, structural supports (if required) and relation to other base graphics. Indicate on a separate signage sheet the location and message for all signage. Submit a sample of the signage material finish and color with the structural finishes.

3.5.5.6 No photographs or colored photocopies of materials will be accepted or approved.

3.5.6 The SID Binder shall include the following information at each design submittal in this order:

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SEQUENCE OF SID SUBMITTAL

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1. Title page
2. Table of contents
3. Design objectives - A statement of design objectives explaining the interior design philosophy of the facility shall be provided in the SID. Design objectives and the proposed method of accomplishing the objectives. Shall cover, when applicable, energy efficiency, safety, health, maintenance, image, personal performance of occupants and functional flexibility.

4. Interior floor plan

5. Interior sample finish boards

Scheme A

Scheme B

Scheme C

Example all restrooms could be noted as color scheme "A", all general open office finishes could be noted as color scheme "B" and the main lobby could be noted as color scheme "C".

6. Room finish schedule

7. Signage

8. Signage plan

9. Integration and layout of specific furniture. Plan must show suitability of proposed space to suit the furniture to be provided.

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4.0 QUANTITY OF DESIGN SUBMITTALS

4.1 General. The documents which the Contractor shall submit to the Government for each submittal are listed and generally described hereinafter.

DISTRIBUTION

Activity and Address	Drawing Size <Full>	Drawing Size <Half>	Color Boards **
Commander, U.S. Army Engineer District, Norfolk 803 Front Street Norfolk VA 23510-1096 ATTN: James Kelly CENAO-TS-EA	1	5	1
Gilbert E. Hanzlik Jr LTC, EN, VaARNG Building 316, Fort Pickett Blackstone VA 23824-6316	1	5	2
U.S. Army Corps of Engineers Construction Area Office 396 East Parade Avenue, Pickett Park Blackstone, VA 23824 ATTN: Kevin Arthur	1	3	1

** Color boards shall be submitted with the 100% building submittal only.

5.0 MAILING OF DESIGN SUBMITTALS

5.1 Mail all design submittals to the Government during design and construction, using an overnight mailing service. The Government will furnish the Contractor addresses where each copy shall be mailed to after award of the contract. The submittals shall be mailed to four (4) different addresses.

6.2 Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

6.0 COORDINATION

6.1 Written Records. The Contractor shall prepare a written record of each design site visit, meeting, or conference, either telephonic or personal, and furnish within five (5) working days copies to the Contracting Officer and all parties involved. The written record shall include subject, names of participants, outline of discussion, and recommendation or conclusions. Number each written record for the particular project under design in consecutive order.

6.2 Design Needs List. Throughout the life of his contract the Contractor shall furnish the COR a monthly "needs" list for design related items. This list shall itemize in an orderly fashion design data required by the Contractor to advance the design in a timely manner. Each list shall include a sequence number, description of action item, name of the individual or agency responsible for satisfying the action item and remarks. The list will be maintained on a continuous basis with satisfied action items checked off and new action items added as required. Once a request for information is initiated, that item shall remain on the list until the requested information has been furnished or otherwise resolved. Copies of the list will be mailed to both the Contracting Officer's Representative and the agencies tasked with supplying the information.

7.0 GOVERNMENT REVIEW

7.1 Within 30 days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly. No design submittals will be reviewed or evaluated until after receipt and acceptance of the proposed design/review schedule.

7.2 After receipt, the Government will be allowed fourteen (14) days to review and comment on each design submittal. For each design review submittal, the COR will furnish, to the Contractor, a single consolidated listing of all comments from the various design sections at the Norfolk District and from all other concerned Governmental Agencies involved in the review process. The review will be for conformance with the technical requirements of the solicitation and the Successful Offeror's (Contractor's) RFP proposal. If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after receipt of these comments in order that the comment can be resolved. The Contractor shall furnish disposition of all comments, in writing, with the next scheduled submittal. The Contractor is cautioned in that if he believes the action required by any comment exceeds the requirements of this contract, that he should take no action and notify the COR in writing immediately. Review conferences will be held for each design submittal at Ft Pickett, Virginia. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences will take place the week after the receipt of the comments by the Contractor.

7.3 If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period will be extended 7 days. Submittals date revisions must be made in writing at least one (1)

week prior to the effect submittal.

7.4 Post review conference action: Copies of comments, annotated with comment action agreed on, will be made available to all parties before the conference adjourns. Unresolved problems will be resolved by immediate follow-on action at the end of conferences. Valid comments will be incorporated. After receipt of final corrected design documents incorporating all valid comments the Norfolk District will allow the contractor to proceed into the construction phases of the project. The Government, however, reserves the right to disapprove design document submittals if comments are significant. If final or backcheck submittal(s) are incomplete or deficient, and require correction by the Contractor and resubmittal for review, the cost of rehandling and reviewing will be deducted from payment due the Contractor at the rate of \$ 5,000.00 per submittal.

8.0 DESIGN ANALYSIS

8.1 Media and Format. Present the design analysis on 8-1/2-inch by 11-inch paper except that larger sheets may be used when required for graphs or other special calculation forms. All sheets shall be in reproducible form. The material may be typewritten, hand lettered, handwritten, or a combination thereof, provided it is legible. Side margins shall be 1-inch minimum to permit side binding and head to head printing. Bottom margins shall be 1-1/4-inches, with page numbers centered 1 inch from the bottom.

8.2 Organization. Assign the several parts and sheets of the design analysis a sequential binding number and bind them under a cover indicating the name of the facility and project number, if applicable. The title page shall carry the designation of the submittal being made. The complete design analysis presented for final review with the final drawings and specifications shall carry the designation "FINAL DESIGN ANALYSIS" on the title page.

8.3 Design Calculations. Design calculations are a part of the design analysis. When they are voluminous, bind them separately from the narrative part of the design analysis. Present the design calculations in a clean and legible form incorporating a title page and index for each volume. Furnish a table of contents, which shall be an index of the indices, when there is more than one volume. Identify the source of loading conditions, supplementary sketches, graphs, formulae, and references. Explain all assumptions and conclusions. Calculation sheets shall carry the names or initials of the author and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

8.4 Automatic Data Processing Systems (ADPS). When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points. Precede each set of computer printouts by an index and by a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices. Preparation of the description which must accompany each set of ADPS printouts shall

include the following:

1. Explain the design method, including assumptions, theories, and formulae.
2. Include applicable diagrams, adequately identified.
3. State exactly the computation performed by the computer.
4. Provide all necessary explanations of the computer printout format, symbols, and abbreviations.
5. Use adequate and consistent notation.
6. Provide sufficient information to permit manual checks of the results.

9.0 DRAWINGS

9.1 Prepare all drawings on Computer-Aided Design and Drafting (CADD) so that they are well-arranged and placed for ready reference and so that they present complete information. The Contractor shall prepare the drawings with the expectation that the Corps of Engineers, in the role of supervision, will be able to construct the facility without any additional assistance from the Contractor. Drawings shall be complete, unnecessary work such as duplicate views, notes and lettering, and repetition of details shall not be permitted. Do not show standard details not applicable to the project, and minimize unnecessary wasted space. Do not include details of standard products or items which are adequately covered by specifications on the drawings. Detail the drawings such that conformance with the RFP can be checked and to the extent that shop drawings can be checked. Do not use shop drawings as design drawings. The design documents shall consist of drawings on a 36" x 24" format. The Contractor shall use standard Corps of Engineers title blocks and borders on all drawings. Submit an index of drawings with each submittal. The COR will furnish the Contractor file, drawing, and specification numbers for inclusion in the title blocks of the drawings.

9.2 Create all drawings using CADD methods in AutoCAD format. Save all Design Complete CADD files as AutoCAD R-2000 or later. The Contractor shall use EM 1110-1-1807 Standards Manual for U.S. Army Corps of Engineers Computer-Aided Design and Drafting (CADD) Systems as guidance to for standard details, cell libraries, title blocks, and layer/level assignments. Drawing features not addressed in EM 1110-1-1807 shall conform to drafting standards.

9.3 Only standard fonts provided by AutoCAD are allowed to be used in the creation of CADD files. No fonts created by third parties or the designer are permitted.

9.4 The uses of Reference files and Xrefs during the design stage is up to the discretion of the designers. All CADD files at Design Complete submittal shall be free standing, independent files, and not supported by reference files. All Xrefs files (AutoCAD) shall be removed at Design Complete submittal.

9.5 Submit all Design Complete CADD files on the following media.

- Read/Write CD-ROM Disk

10.0 SPECIFICATIONS

10.1 The Contractor shall submit marked-up and final specifications as required. The specifications may be any one of the major, well known master guide specification sources such as MASTERSPEC from the American Institute of Architects, SPECTEXT from Construction Specification Institute or Corps of Engineers Guide Specifications, etc. Use only one source for the project. Edit the specifications for this project and submit in marked-up or redlined draft version at the Final Review submittal stage. If the design is based on a specific product, the specification shall consist of the important features of the product. The specification shall be detailed enough such that another product meeting the specification could be substituted and it would not adversely impact the project. After incorporation of comments, submit a final, design complete specification package. Delete all marked-out or redlined text and type in all inserted text.

10.2 Submittal Register. Develop the submittal requirements during construction during the design phase of the contract, by producing a Contractor Submittal Register during design. The contractor shall prepare the Submittal Register on ENG Form 4288 in both hardcopy and electronic format. The Contractor shall be responsible for listing all required submittals necessary to insure the project requirements are complied with.

The Register shall identify submittal items such as shop drawings, manufacturer's literature, certificates of compliance, material samples, guarantees, test results, etc that the Contractor shall submit for review and/or approval action during the life of the construction contract. The Contractor shall place all the Submittal Register pages in an appendix of the final specifications.

11.0 CONTENTS OF DESIGN SUBMITTALS

11.1 The First Site/Utility Design Submittal 100% shall contain, as a minimum, the following:

11.1.1 General Narratives Analysis:

11.1.1.1 Site/Layout: Explanation of objectives and factors influencing siting decisions. General overview of major site features planned, such as building orientations, drainage patterns, parking provisions, traffic circulation (POV and Military), provisions for the handicapped, security requirements, fencing and access points, hardstands, graveled areas, etc. Rationale for locating major site elements. Set back requirements or specific clearance requirements. Locations of borrow and spoil areas.

11.1.1.2 Utility Systems: Design narrative for the fuel oil, waste oil, water supply, storm drainage, storm water pollution prevention, and wastewater systems relating to this project. Include an analysis of the existing distribution systems capability to supply sufficient quantity at adequate levels. If the existing distribution systems are inadequate, provide the design solution to augment the systems to provide the requirements for the new facilities.

11.1.1.3 Paving Systems: Narrative shall provide the basis for assumptions and decisions made with respect to the various paving methodologies and materials selected.

11.1.2 All drawings included in the required technical data for the proposal submission (see SECTION 00110: TECHNICAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS), shall be developed to 100 percent completion. In addition to the individual utility plans, submit a combined utility plan drawn to the same scale as the individual utility plans.

11.1.2.1 General Site Layout: Scale shall be included.

11.1.2.2 Site Grading and Drainage Plans: Show locations of all sediment basins, diversion ditches, underground retention structures, and other erosion control structures. Indicate the approximate drainage areas each will service. Indicate the materials, construction and capacity of each structure. Include limits of landscaping and seeded areas. General site grading and drainage shall be indicated by contour lines with an interval of not more than approximately 3ft.

11.1.2.3 Sanitary Sewer Plan: Scale shall be as indicated in SECTION 00110: TECHNICAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS and profiles showing location and elevation of pipe, thrust blocks, manholes, etc. Materials and construction of main and appurtenances shall be indicated. Specifications shall be provided.

11.1.2.4 Water Supply Line Plans: Scale shall be as indicated in SECTION 00110: TECHNICAL SUBMISSION REQUIREMENTS AND INSTRUCTIONS and profiles showing locations of valves, thrust blocks, connections, etc. Materials shall be indicated and specifications shall be provided for valves, pipes, etc.

11.1.2.5 Electrical Plan Requirements:

11.1.2.5.1 Required diagrams and details on Site Electrical Drawings.

11.1.2.5.1.a. Off-Site Electrical Distribution Plan:
11.1.2.5.1.b. Off-Site Primary Circuit Routing Plans:
11.1.2.5.1.c. Off-Site One Line Diagram. (If applicable)
11.1.2.5.1.d. Off-Site Details. (Aerial Pole Line Construction, etc.) (If applicable).
11.1.2.5.1.e. On-Site Electrical Distribution Plan:
11.1.2.5.1.f. On-Site One Line Diagram.
11.1.2.5.1.g. On-Site Distribution Transformer Schedule: Provide with the following headings:

Transformer Designation.
Transformer Size (KVA).
Building(s) Served.
Primary Phase(s) and Circuit to which connected.

11.1.2.5.1.h. On-Site Details (Site Lighting, Trenching, Pad-Mounted Transformer, etc.).

11.1.2.6 Specifications: Provide final specifications which include all sections which apply to site/utility work.

11.1.2.7 Design Analysis: Design analysis shall include design calculations fully developed to support the design of the site and utility systems included in this submittal.

11.1.2.8 Geotechnical Report: Geotechnical information and analyses must be provided to support all assumptions and design parameters utilized in the presented site/utility design as applicable. Geotechnical analyses must be performed by a Registered Professional Engineer whose specialty is Geotechnical Engineering.

11.2 The Preliminary Conformance - 50% Building Submittal shall contain, as a minimum, the following:

11.2.1 Reserved.

11.2.2 Reserved.

11.2.3 Architectural

11.2.3.1 Design narrative shall provide a summary of functional space relationships, as well as circulation. There shall also be a general statement for the rationale behind the major design decisions.

11.2.3.2 Architectural Floor Plans shall indicate dimensions, columns lines, and detail references. Toilets and other specialized areas shall be drawn to 1/4" scale and shall show any needed interior features.

11.2.3.3 Finish schedule shall indicate material, finishes, colors and any special interior design features such as soffits, fascias, and lighting troughs, etc.

11.2.3.4 All required equipment shall be shown on the drawings with an equipment list.

11.2.3.5 List any special graphics requirements that will be provided.

11.2.3.6 Schedules shall be provided for both doors and windows. These schedules shall indicate sizes, types, and details for all items shown on floor plans.

11.2.3.7 Hardware sets using BHMA designations.

11.2.3.8 Composite floor plan showing all prewired workstations. Also show typical elevations of each type of workstation.

11.2.3.9 SID package.

11.2.3.10 Fire Protection and Life Safety Analysis. This analysis must be performed by a Registered Fire Protection Engineer (FPE). NICET certification is not sufficient to address this requirement.

11.2.4 Structural Systems

11.2.4.1 State the live loads to be used for design. Include roof and floor loads; wind loads, lateral earth pressure loads, seismic loads, etc., as applicable.

11.2.4.2 Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method.

11.2.4.3 Furnish calculations for all principal roof, floor, and foundation members.

11.2.4.4 This submittal shall include drawings showing roof and floor framing plans as applicable. Principal members will be shown on the plans. A foundation plan shall also be furnished showing main footings and grade beams where applicable. Where beam, column, and footing schedules are used, show schedules and fill in sufficient items to indicate method to be used. Show typical bar bending diagram if applicable. Typical sections shall be furnished for roof, floor, and foundation conditions. Structural drawings for proposals and submittals shall be separate from architectural drawings.

11.2.4.5 Provide any computer analyses used shall be widely accepted, commercially available programs and complete documentation of the input and output of the program.

11.2.4.6 Provide complete seismic analyses for all building structural components. Seismic calculations shall clearly demonstrate compliance with all requirements set forth in the Statement of Work.

11.2.5 Plumbing Systems

11.2.5.1 List all references used in the design including Government design documents and industry standards.

11.2.5.2 Provide justification and brief description of the types of plumbing fixtures, piping materials and equipment proposed for use.

11.2.5.3 Prepare detail calculations for systems such as sizing of domestic hot water heater and piping; sizing of the building domestic water service and mains; compressed air system and storage tanks; fuel oil piping and tanks.

11.2.5.4. Indicate locations and general arrangement of plumbing fixtures and major equipment.

11.2.5.5 Include plan and isometric riser diagrams of all areas including hot water, cold water, waste and vent piping. Piping layouts and risers should also include fuel oil, compressed air, and other specialty systems as applicable.

11.2.5.6 Include equipment and fixture connection schedules with descriptions, capacities, locations, connection sizes and other information as required.

11.2.6 Fire Protection/Suppression

11.2.6.1 List all references used in the design including Government design documents and industry standards used to generate the fire protection analysis.

11.2.6.2 Classify each building in accordance with fire zone, building floor areas and height and number of stories. This information shall be contained in the fire protection analysis.

11.2.6.3 Discuss and provide description of required fire protection

requirements including extinguishing equipment, alarm equipment and water supply. This information shall be contained in the fire protection design analysis.

11.2.6.4 Prepare a plan for each floor of each building that presents a compendium of the total fire protection features being incorporated into the design. Provide the following types of information:

The location and rating of any fire-resistive construction such as occupancy separations, area separations, exterior walls, shaft enclosures, corridors, stair enclosures, exit passageways, etc.

The location and coverage of any fire suppression systems (sprinkler risers, standpipes, etc.).

The location of any other major fire protection equipment.

Indicate any hazardous areas and their classification.

11.2.6.5 Prepare a schedule describing the internal systems with the following information: fire hazard and occupancy classifications, building construction type, GPM/square foot sprinkler density, area of operation and other as required.

11.2.6.6 Hydraulic calculations based on water flow test shall be prepared for each sprinkler system to insure that flow and pressure requirements can be met with current water supply.

11.2.7 Electronic Systems: Electronic Systems responsibilities include the following:

Fire Alarm System
Fire Suppression System Control
Public Address System
Telephone System
Interior Building LAN System
Special Grounding Systems
Cathodic Protection
Central Control and Monitoring System
Site Lighting Control System

11.2.7.1 The design analysis shall include all calculations required to support design decisions and estimates at this stage of design. The analysis shall include specific criteria furnished, conference minutes and cost analyses of all systems considered.

11.2.7.2 Design of the fire alarm system shall include layout drawings for all devices and a riser diagram showing the control panel, annunciator panel, all zones, radio transmitter and interfaces to other systems (HVAC, sprinkler, etc.).

11.2.7.3 Specify all components of the Fire Suppression (FS) System in the FS section of the specifications. Provide a clear description of how the system will operate and interact with other systems such as the fire alarm system. Include a riser diagram on the drawings showing principal components and interconnections with other systems. Include FS system components on drawing legend. All components shown on floor plans shall be

designated as FS system components (as opposed to Fire Alarm components). Show the location of FS control panels, HVAC control devices, sensors, and 120V power panel connections on the floor plans. Indicate zoning of areas by numbers (1, 2, 3) and detectors subzoned for cross zoning by letter designations (A and B). Differentiate between ceiling mounted and underfloor detectors with distinct symbols and indicate subzone of each.

11.2.7.4 Show location of telephone outlets (including pay phones) on the plans. Include legend and symbol definition to indicate height above finished floor. Show Telephone Conduit System Riser Diagram. Size conduit on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans. Underground telephone distribution conduit shall be shown on either the electrical or electronic site plan.

11.2.7.4.1 Show location of LAN outlets on the plans. Include legend and symbol definition to indicate height above finished floor. Show LAN System Riser Diagram. Size conduit on Riser Diagram. Do not show conduit runs between backboard and outlets on the floor plans.

11.2.7.5 Grounding System. The specifications and drawings shall completely reflect all of the design requirements. The specifications shall require field tests (in the construction phase), witnessed by the Contracting Officer, to determine the effectiveness of the grounding system. The design shall include drawings showing existing construction. Verification of the validity of any existing drawings and/or any other data furnished by the Government shall be the responsibility of the engineering services firm.

11.2.7.6 Provide a statement describing the extent of any exterior work such as telephone lines, duct banks, etc., outside of 5 feet from the building line.

11.2.7.7 Provide the name of the licensed corrosion engineer or NACE specialist. Provide the following for cathodic protection systems:

Clearly define areas of structures or components in soil or water to be protected.

Type system recommended, comparison of systems, cost estimates showing all equipment alternatives.

Calculations on all systems that are considered showing all information and descriptions.

11.2.7.7.1 Design of Cathodic Protection. The design shall clearly provide a thorough and comprehensive specification and drawing. The design plans and specifications shall show extent of the facilities to be protected, location and type of anodes, location of test points, details for sectionalizing an underground piping system. This design shall be complete enough to purchase equipment and build without design changes to meet criteria of protection.

11.2.7.8 Exterior work to be shown on electrical site plan.

Existing and new communications service lines, both overhead and underground, shall be properly identified.

Show removals and relocations, if any.

11.2.7.9 Provide a descriptive narrative of all electronic systems that are required for project. Define any hazardous areas (as defined in the National Electric Code) and indicate the type of equipment proposed for use in such areas. Show the location of all electronic system panels, etc., on the floor plans. Show the proposed riser diagrams for all systems. Sizes of all conduit, wires, cables, panels, etc. Provide a complete symbol legend for all devices or equipment shown on the plans. For work requiring removals or demolition, the designer shall show by use of drawings or narrative, how demolition work is to be done.

11.2.8 Electrical and Mechanical Systems: Provide all information as required on the 100% design submittal developed to 50% completion.

11.2.9 Specifications: Draft of specifications for all facilities, including index and trade sections.

11.3 The Final Design - 100% Building submittal shall contain, as a minimum, the following items for all submittals:

11.3.1 General: A complete set of construction documents plans and specifications at the same level of detail as if the project were to be open bid including a complete list of equipment, fixtures and materials to be used. The final drawings are an extension of the reviewed 50% drawings and are to include the 50% comments and responses. All details shall be shown on the drawings.

11.3.2 The design analysis is an extension of the reviewed 50% design analysis and supports and verifies that the design complies with the requirements of the project.

11.3.3 Submit marked-up specifications. The specifications shall be coordinated with the drawings and describe in detail all items shown on the drawings.

11.3.4 Not Used.

11.3.5 Architectural

11.3.5.1 All architectural drawings shall be coordinated with the other engineering disciplines. Ensure that the plans are in compliance with the applicable codes. It will be the Contractor's responsibility to incorporate the changes and corrections necessary based on the comments generated from any design review submittal as well as verify the consistency between plans and specification. The evaluation of the Contractor's submittals shall be based on degree to which the submittal meet the requirements set forth in this document and the specifications.

11.3.5.2 Space Listing: Contractor shall provide in spreadsheet format in the design analysis package a complete listing of all spaces, their designations, the building in which they are located, and the square foot area of the space.

11.3.5.3 SID package.

11.3.5.4 Fire Protection and Life Safety Analysis. This analysis must

be performed by a Registered Fire Protection Engineer (FPE). NICET certification is not sufficient to address this requirement.

11.3.6 Structural Design

11.3.6.1 Furnish complete checked calculations for all structural members. Incorporate any changes required by comments on 50% Design Submittal.

11.3.6.2 Prior to this submittal, structural drawings shall be coordinated with all other design disciplines.

11.3.6.3 The final structural drawings shall contain the following information as a set of general notes:

- The allowable soil bearing value.
- The design stresses of structural materials used.
- The design live loads used in the design of various portions of the structures.
- The design wind speed.
- The seismic zone and the "K", "C", "I" and "Z" values used in design.

11.3.6.4 All structural drawings and calculations shall be checked and stamped by the designer of record (a registered Professional Engineer).

11.3.7 Fire Sprinkler System: Provide a file of the input data used in the computer program to design the fire sprinkler system as well as the output data.

11.3.8 Specific Mechanical and Plumbing Requirements:

11.3.8.1 Required Plans, Diagrams, Schedules and Details on Unit Mechanical Drawings:

11.3.8.1.1. Mechanical Floor Plan: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

- Room designations.
- Mechanical legend and applicable notes.
- Location of all ductwork or piping (double line ductwork required).
- Location and capacity of all terminal units (i.e., registers, diffusers, grilles, hydronic baseboards).
- Pre-Fabricated Paint Spray Booth
- Paint Preparation Area
- Exhaust fans and specialized exhaust systems.
- Size of all ductwork and piping.
- Thermostat location.
- Location of heating/cooling plant (i.e., boiler, chiller, cooling tower, etc).
- Location of all air handling equipment.
- Return air paths (i.e., undercut doors, transfer grilles).
- Flue piping size and location.
- Piping diagram for forced hot water system (if used).
- Fuel supply and return piping

11.3.8.1.2. Equipment Schedule: Complete equipment Schedules shall be provided. Schedule shall also include:

Capacity
Electrical characteristics
Efficiency (if applicable)
Manufacturer's name
Optional features to be provided
Physical size
Minimum maintenance clearances

11.3.8.1.3 Details: Construction details, sections, elevations, etc., shall be provided where required for clarification of methods and materials of design. Roof and exterior wall penetrations shall be detailed on the drawings.

11.3.8.2 Plumbing Floor Plan: The floor plan shall show all principal architectural features of the building which will affect the plumbing design. Separate plumbing plans are required. The floor plan shall also show the following:

Room designations.
Fixture Schedule.
Location of utility entrances.
Waste and water pipe location and size.
Fixture designations.
Compressed Air System for Shop Use
Waste Oil Collection System

11.3.8.3 Design Analysis: Complete design calculations for mechanical and plumbing systems. Include computations for sizing PM&E equipment, compressed air system, domestic water heaters, air duct design, and U-factors for ceilings, roofs and exterior walls and floors. Contractor shall employ commercially available energy analysis techniques to determine the energy performance of all passive systems and features. Use of hourly energy load computer simulation (e.g., TRNSYS, DOE 2.1 Blast, etc.) is required. These calculations can be used to size the mechanical systems. Based on the results of calculations, provide a complete list of the materials and equipment proposed for heating and plumbing, with the manufacturer's published cataloged product installation specifications and roughing-in data. The heating and cooling equipment data shall include the manufacturer's wiring diagrams, installation specifications, ARI certification, and the standard warranty for the equipment.

11.3.9 Specific Electrical Requirements:

11.3.9.1 Required Plans, Diagrams, Schedules, and Details on Unit Electrical Drawings:

11.3.9.1.1. Electrical Floor Plan. The floor plans shall show all principle architectural features of the building which will affect the electrical design. The floor plan shall also show the following:

Room designations.
Electrical legend and applicable notes.
Lighting fixtures, properly identified.
Location of smoke and CO detectors.
Location of telephone and LAN outlets.
Switches for control of lighting.

Receptacles.

Location and designation of panelboards. Plans should clearly indicate type of mounting required (flush or surface) and be reflected accordingly in specifications.

Service entrance (conduit and main disconnect).

Location, designation and rating of motors and/or equipment which requires electrical service. Show method of termination and/or connection to motors and/or equipment. Show necessary junction boxes, disconnects, controllers (approximate only), conduit stubs, and receptacles required to serve the motor and/or equipment.

11.3.9.1.2. Building Riser Diagram (from pad-mounted transformer to unit load center panelboard): Indicate the types and sizes of electrical equipment and wiring. Include grounding and metering requirements.

11.3.9.1.3. Load Center Panelboard Schedule(s): Schedule shall indicate the following information:

Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting.

Branch Circuit Designations.

Load Designations.

Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)

Branch Circuit Connected Loads (AMPS).

Special Features.

11.3.9.1.4 Lighting Fixture Schedule: (Schedule shall indicate the following information:)

Fixture Designation.

General Fixture Description.

Number and Type of Lamp(s).

Type of Mounting.

Special Features.

11.3.9.1.5. Details: Construction details, sections, elevations, etc., shall be provided where required for clarification of methods and materials of design.

11.3.9.2. Required Electrical Design Analysis: Design analysis and calculations for the electrical systems shall be prepared by a licensed professional engineer with experience in commercial/industrial facilities, and shall be stamped as such. The design analysis shall be separately bound, in one or more volumes. Show functional and engineering criteria, design information, and calculations applicable to the project. The analysis shall be organized in a format appropriate for review, approval, and record purposes. The design calculations shall indicate methods and references identified, and shall explain assumptions and conclusions.

11.3.9.2.1. Voltage Drop (VD) Calculations: Select conductor sizes of primary feeders, site lighting circuits, service laterals, and unit feeder conductors. Calculate maximum length for each phase of each primary circuit, using a maximum allowable VD for each circuit. Calculate voltage drops for each conductor. Maximum allowable voltage drop for site lighting and service laterals is 3%. The combined voltage drop for the service laterals, unit feeders, and branch circuit cannot exceed 5%. Calculate the

available fault current at the main breaker for the living unit panel. Provide a coordination study to support breaker selection.

11.3.10 Specifications: Provide final specifications. The Contractor shall make final identification of all materials and finishes at this stage.

11.4 Design complete submittal:

11.4.1 Design Drawings: Drawings shall be 100% complete, signed and sealed by the designer of record. All previous review comments shall be incorporated.

11.4.2 Design Analysis: Complete design analysis for all design disciplines. The final Fire Protection and Life Safety Analysis shall be included in the Design Analysis.

11.4.3 Comment Response Package: Complete package showing all comments from all previous reviews and the respective response and disposition.

11.4.4 This submittal shall include all drawings and design information from the 100% site/utility submittal to form a complete design package.

12.0 DESIGN RELATED PRODUCTS

12.1 Architectural Renderings: Contractor shall provide the original and three copies of each ground level perspective artist's rendering of the completed facility addition along Military Road with walks, parking, and landscaping. Renderings shall be no smaller than 14" x 18" or larger than 28" x 36", multi-colored, and shall be suitably titled, matted, and framed.

12.2 DD Form 1354: Three (3) sets of DD Form 1354, Transfer and Acceptance of Military Real Property shall be prepared in accordance with ER 415-345-38 and submitted to the Contracting Officer. Copies of Form 1354 and ER 415-345-38 will be furnished to the successful contractor following award of the project.

12.3 Submittal Register, ENG FORM 4288: The Contractor shall complete and submit three (03) copies of a "preliminary" Eng Form 4288, Submittal Register to Contracting Officer. The "preliminary" Eng Form 4288, Submittal Register shall have the column "Submittal Identification", "Specification Paragraph Number", "Description of Submittal" "Type of Submittal", and "Remarks" completed; the Contractor shall identify whether the submittal is for "Government Approval" or for "Government Information" under the column "Remarks." The "final" Eng Form 4288, Submittal Register, shall be in accordance with clause CONTRACTOR SUBMITTALS AND SUBMITTAL CONTROL in this section.

12.4 Reproduction: Upon Government acceptance of 100% design documents, the original will be returned to the Contractor for reproduction purposes. The Contractor will be responsible for his own reproduction as well as reproduction for Government use. The Government will require twice the number of copies of the plans and specifications as were required for the review stages, no color boards will be required. The originals will be retained by the Contractor for recording of as-built conditions. Upon completion of the project, the original design documents corrected to

reflect as-built conditions will be supplied to the Government.

SECTION 01111
SAFETY AND HEALTH REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CORPS OF ENGINEERS (COE)

EM 385-1-1 Safety and Health Requirements Manual
(September 1996)

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; All other submittals are submitted for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL DESCRIPTIONS:

SD-01 Preconstruction Submittals

Safety and Health Plan; G.

1.3 SAFETY REQUIREMENTS AND ACCIDENT PREVENTION

1.3.1 Standards

The Contractor shall comply with Occupational Safety and Health Act (OSHA) Standards, the Corps of Engineers Manual EM 385-1-1, "Safety and Health Requirements Manual," NFPA 101, and state, local, and facility safety requirements.

1.3.2 SAFETY AND HEALTH PLAN

1.3.2.1 Preparation and Implementation

An Accident Prevention Plan (APP) shall be prepared covering onsite work to be performed by the Contractor and all subcontractors, and shall at a minimum address the requirements for an Accident Prevention Plan (APP), as contained in Appendix A, EM 385-1-1. The Safety and Health Manager shall be responsible for the development, implementation and oversight of the APP. The APP shall establish, in detail, the protocols necessary for the anticipation, recognition, evaluation, and control of hazards associated with each task performed. The APP shall address general safety and health requirements and procedures. The level of detail provided in the APP shall be tailored to the type of work, complexity of operations to be performed, and hazards anticipated. Details about some activities may not be available when the initial APP is prepared and submitted. Therefore, the APP shall address, in as much detail as possible, anticipated tasks, their related hazards and anticipated control measures.

1.3.2.2 Acceptance and Modifications

Prior to submittal, the APP shall be signed and dated by the Contractor's Safety and Health Manager and the Site Superintendent. The APP shall be submitted for review at least days prior to the Prewrite Safety Conference. Deficiencies in the APP will be discussed at the Prewrite Safety Conference, and the APP shall be revised to correct the deficiencies and resubmitted for acceptance. Onsite work shall not begin until the plan has been accepted. A copy of the written APP shall be maintained onsite. As work proceeds, the APP shall be adapted to new situations and new conditions. Changes and modifications to the accepted APP shall be made with the knowledge and concurrence of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, shall bring such hazard to the attention of the Safety and Health Manager, the Site Superintendent, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, necessary action shall be taken to re-establish and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted APP shall be cause for stopping of work until the matter has been rectified to the satisfaction of the Contracting Officer.

1.3.3 Corps of Engineers Standards

Corps of Engineers Manual EM 385-1-1, referred to in "ACCIDENT PREVENTION" article of Contract Clauses, is hereby supplemented or revised as follows:

1.3.3.1 Conflicts

When a conflict exists between the Corps of Engineers Safety and Health Requirements Manual, other safety requirements, or the contract plans and/or specifications, the most stringent requirement shall prevail. (NAOSA 5 FEB 87).

1.3.3.2 Front End Loader - Backhoe Machines

1.3.3.2.# Non-compliance Safety Check

All front end loader-backhoe machines and other machines, such as tractors that utilize a backhoe attachment, shall be checked for:

- a. Exposed backhoe boom swing foot pedals.
- b. Backhoe boom swing lever which can be reached by a man standing on the ground or on the outrigger support bracket.

1.3.3.2.# Correction and Fabrication of Non-compliance Safety Items

Where these conditions exist, guards shall be fabricated to:

- a. Cover over exposed foot pedals to prevent someone from accidentally stepping on them.
- b. Inclose the swing lever so as to preclude operation from the ground or from the outrigger support bracket.

1.3.3.3 Attendance at Safety Meetings

In order to allow for maximum attendance at weekly tool box meetings and monthly supervisor meetings by Corps of Engineers personnel, the Contractor

shall advise the CO's Office, a minimum of 48 hours before the start of each meeting, of the date, time and location of Safety Meetings.

1.3.3.4 Minutes of Safety Meetings

Minutes shall be prepared by the Contractor and forwarded to the Contracting Officer by close of business the next work day.

1.3.3.5 Protective Footwear

Protective footwear as defined by American National Standards Institute Z41 shall be worn by all working personnel on site.

1.3.3.6 Ground Fault Circuit Interrupters (GFCI)

GFCI's are required for work on this contract in accordance with EM 385-1-1. GFCI's are also required when using electric power extension cords.

1.3.3.7 Crawler-, Truck-, and Wheel-Mounted Cranes

Implementation of paragraph 16.D.05 shall include the following:

a. When a crane is performing duty cycle work (such as clamshell, dragline, grapple, or pile driving) it does not require anti-two block equipment. If the crane is required to make a non-duty cycle lift (for example, to lift a piece of equipment, a tool box, or supplies), it will be exempt from the anti-two block equipment requirements if the following procedures are implemented:

(1) an international orange warning device (warning flag, warning tape, or warning ball) is properly secured to the hoist line at a distance of 8 to 10 feet above the hoist rigging;

(2) the signalperson (or an individual designated as the signalperson) acts as a spotter to alert the crane operator with a "STOP" signal when the warning device approaches the boom tip and the crane operator ceases hoisting functions when alerted of this; and

(3) while the non-duty cycle lift is underway, the signal person shall not stand under the load, shall have no duties other than signalperson, and shall comply with the signaling requirements of EM 385-1-1;

b. Anti-two block devices are always required when hoisting personnel by crane or derrick.

PART 2 PRODUCTS (This Part Not Used)

PART 3 EXECUTION (This Part Not Used)

-- End of Section --

MASTER SPECIFICATION FOR MILITARY CONSTRUCTION

SECTION 01200
PROJECT MEETINGS

PART 1 GENERAL

1.1 SUBMITTALS (Not Applicable)

1.2 PRECONSTRUCTION CONFERENCE

1.2.1 Scheduling

After award of the construction contract and prior to the start of any construction work, the Contracting Officer (CO) will schedule and conduct a preconstruction conference. The Contractor's Project Manager, Superintendent and Quality Control System Manager shall attend this meeting. The Contractor is encouraged to have an officer of his company (Project Manager could be this person) and representation from each of his sub-contractors at the conference. This conference will be held at a location and time as specified by the CO.

1.2.2 Purpose

The purpose of this preconstruction conference is to enable the CO to outline the procedures that will be followed by the Government in its administration of this construction contract and to discuss the performance that will be expected from the Contractor. This conference will allow the Contractor an opportunity to ask questions about the Government's supervision and inspection of contract work, about security requirements, regulations, etc. The CO may invite Using Service personnel and any other Government personnel to attend this conference.

1.2.3 Discussion Items

The following is a list of items for discussion during the preconstruction conference. However, the Contracting Officer may include additional items for discussion as conditions and the work require.

- a. Authority of the Area/Resident Engineer and organization of the Area/Resident office.
- b. Contractor's Progress Schedule.
- c. Correspondence Procedures.
- d. Contractor Labor Standards Provisions.
- e. Contract Modifications and Administrative Procedures.
- f. Contractor's Administrative, Laydown and Storage Areas.
- g. Procedures for Processing Submittals.
- h. Payment Estimate Data and Procedures.

- i. Contractor Utilities.
- j. Security Requirements and Other Regulations, if applicable.
- k. Government Furnished Equipment, if applicable.
- l. Disposition of Salvage Property.
- m. Contractor Insurance Requirements.
- n. Value Engineering Program.
- o. Contractor Performance Evaluation.
- p. As-Built Drawings.
- q. Single Point of Contact for Warranty of Construction.
- r. Turnover of Completed Facilities.

1.3 OTHER MEETINGS

Other meetings are or may be scheduled to be held after the Preconstruction Conference, and such meetings may include the following:

- a. Accident Prevention Safety Plan
- b. Quality Control Plan.
- c. Environmental Protection Plan.
- d. Warranty Management Plan (Post Construction Warranty Conference)
- e. Design Review Meetings
- f. Design Comment Resolution Meetings

1.4 FACILITY MEETINGS

The Facility may also schedule meetings with the Contractor through the CO during the progress of construction work.

1.5 MINUTES OF MEETINGS

The Government will prepare minutes of the meeting and will provide the Contractor with a signed original for review and concurrence. The minutes shall include all items discussed at the meeting and the Government will make all corrections provided by the Contractor and resubmit the corrected minutes to the Contractor within seven days.

1.6 Warranty Management Plan

The Contractor shall provide a Warranty Management Plan, not less than 30 days prior to the Post-Construction Warranty Conference. As a minimum, include a table, showing the requirements, and attach certificates:

- a. List of warranties provided.

- b. List of equipment, names of manufacturers and suppliers and phone numbers.
- c. Period of warranties and Start Date.
- d. List of Extended Warranties.
- e. Warranty Certificates.
- f. Single Point of Contact for Warranty of Construction.

PART 2 PRODUCTS (This Part Not Used)

PART 3 EXECUTION (This Part Not Used)

-- End of Section --

SECTION 01312

QUALITY CONTROL SYSTEM (QCS)

1.1 GENERAL

The Government will use the Resident Management System for Windows (RMS) to assist in its monitoring and administration of this contract. The Contractor shall use the Government-furnished Construction Contractor Module of RMS, referred to as QCS, to record, maintain, and submit various information throughout the contract period. This joint Government-Contractor use of RMS and QCS will facilitate electronic exchange of information and overall management of the contract. QCS provides the means for the Contractor to input, track, and electronically share information with the Government in the following areas:

- Administration
- Finances
- Quality Control
- Submittal Monitoring
- Scheduling
- Import/Export of Data

1.1.1 Electronic Communications

For ease and speed of communications, both Government and Contractor will, to the maximum extent feasible, exchange documentation in electronic format. Pay requests and other documents comprising the official contract record shall also be provided in paper format, with signatures and dates where necessary. Paper documents will govern, in the event of discrepancy with the electronic version.

1.1.2 Other Factors

Particular attention is directed to Contract Clause, "Schedules for Construction Contracts", Contract Clause, "Payments", Section 01320, PROJECT SCHEDULE, Section 01330, SUBMITTAL PROCEDURES, and Section 01451, CONTRACTOR QUALITY CONTROL, which have a direct relationship to the reporting to be accomplished through QCS. Also, there is no separate payment for establishing and maintaining the QCS database; all costs associated therewith shall be included in the contract pricing for the work.

1.2 QCS SOFTWARE

QCS is a Windows-based program that can be run on a stand-alone personal computer or on a network. The Government will make available the QCS software to the Contractor after award of the construction contract. Prior to the Pre-Construction Conference, the Contractor shall be responsible to download, install and use the latest version of the QCS software from the Government's RMS Internet Website. Upon specific justification and request by the Contractor, the Government can provide QCS on CD-ROM. Any program updates of QCS will be made available to the Contractor via the Government RMS Website as they become available.

1.3 SYSTEM REQUIREMENTS

The following listed hardware and software is the minimum system configuration that the Contractor shall have to run QCS:

Hardware

IBM-compatible PC with 500 MHz Pentium or higher processor
128+ MB RAM for workstation / 256+ MB RAM for server
1 GB hard drive disk space for sole use by the QCS system
3 1/2 inch high-density floppy drive
Compact disk (CD) Reader, 8x speed or higher
SVGA or higher resolution monitor (1024 x 768, 256 colors)
Mouse or other pointing device
Windows compatible printer (Laser printer must have 4+ MB of RAM)
Connection to the Internet, minimum 56 BPS

Software

MS Windows 98, ME, NT, or 2000
Word Processing software compatible with MS Word 97 or newer
Latest version of : Netscape Navigator, Microsoft Internet Explorer, or other browser that supports HTML 4.0 or higher
Electronic mail (E-mail), MAPI compatible
Virus protection software that is regularly upgraded with all issued manufacturer's updates

1.4 RELATED INFORMATION

1.4.1 QCS User Guide

After contract award, the Contractor shall download instructions for the installation and use of QCS from the Government RMS Internet Website; the Contractor can obtain the current address from the Government. In case of justifiable difficulties, the Government will provide the Contractor with a CD-ROM containing these instructions.

1.5 CONTRACT DATABASE

Prior to the pre-construction conference, the Government shall provide the Contractor with basic contract award data to use for QCS. The Government will provide data updates to the Contractor as needed, generally by files attached to E-mail. These updates will generally consist of submittal reviews, correspondence status, QA comments, and other administrative and QA data.

1.6 DATABASE MAINTENANCE

The Contractor shall establish, maintain, and update data for the contract in the QCS database throughout the duration of the contract. The Contractor shall establish and maintain the QCS database at the Contractor's site office. Data updates to the Government shall be submitted by E-mail with file attachments, e.g., daily reports, schedule updates, payment requests. If permitted by the Contracting Officer, a data diskette or CD-ROM may be used instead of E-mail (see Paragraph DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM). The QCS database typically shall include current data on the following items:

1.6.1 Administration

1.6.1.1 Contractor Information

The database shall contain the Contractor's name, address, telephone numbers, management staff, and other required items. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver Contractor administrative data in electronic format via E-mail.

1.6.1.2 Subcontractor Information

The database shall contain the name, trade, address, phone numbers, and other required information for all subcontractors. A subcontractor must be listed separately for each trade to be performed. Each subcontractor/trade shall be assigned a unique Responsibility Code, provided in QCS. Within 14 calendar days of receipt of QCS software from the Government, the Contractor shall deliver subcontractor administrative data in electronic format via E-mail.

1.6.1.3 Correspondence

All Contractor correspondence to the Government shall be identified with a serial number. Correspondence initiated by the Contractor's site office shall be prefixed with "S". Letters initiated by the Contractor's home (main) office shall be prefixed with "H". Letters shall be numbered starting from 0001. (e.g., H-0001 or S-0001). The Government's letters to the Contractor will be prefixed with "C".

1.6.1.4 Equipment

The Contractor's QCS database shall contain a current list of equipment planned for use or being used on the jobsite, including the most recent and planned equipment inspection dates.

1.6.1.5 Management Reporting

QCS includes a number of reports that Contractor management can use to track the status of the project. The value of these reports is reflective of the quality of the data input, and is maintained in the various sections of QCS. Among these reports are: Progress Payment Request worksheet, QA/QC comments, Submittal Register Status, Three-Phase Inspection checklists.

1.6.2 Finances

1.6.2.1 Pay Activity Data

The QCS database shall include a list of pay activities that the Contractor shall develop in conjunction with the construction schedule. The sum of all pay activities shall be equal to the total contract amount, including

modifications. Pay activities shall be grouped by Contract Line Item Number (CLIN), and the sum of the activities shall equal the amount of each CLIN. The total of all CLINs equals the Contract Amount.

1.6.2.2 Payment Requests

All progress payment requests shall be prepared using QCS. The Contractor shall complete the payment request worksheet and include it with the payment request. The work completed under the contract, measured as percent or as specific quantities, shall be updated at least monthly. After the update, the Contractor shall generate a payment request report using QCS. The Contractor shall submit the payment requests with supporting data by E-mail with file attachment(s). If permitted by the Contracting Officer, a data diskette may be used instead of E-mail. A signed paper copy of the approved payment request is also required, which shall govern in the event of discrepancy with the electronic version.

1.6.3 Quality Control (QC)

QCS provides a means to track implementation of the 3-phase QC Control System, prepare daily reports, identify and track deficiencies, document progress of work, and support other contractor QC requirements. The Contractor shall maintain this data on a daily basis. Entered data will automatically output to the QCS generated daily report. The Contractor shall provide the Government a Contractor Quality Control (CQC) Plan within the time required in Section 01451, CONTRACTOR QUALITY CONTROL. Within seven calendar days of Government acceptance, the Contractor shall submit a data diskette or CD-ROM reflecting the information contained in the accepted CQC Plan: schedule, pay activities, features of work, submittal register, QC requirements, and equipment list.

1.6.3.1 Daily Contractor Quality Control (CQC) Reports.

QCS includes the means to produce the Daily CQC Report. The Contractor may use other formats to record basic QC data. However, the Daily CQC Report generated by QCS shall be the Contractor's official report. Data from any supplemental reports by the Contractor shall be summarized and consolidated onto the QCS-generated Daily CQC Report. Daily CQC Reports shall be submitted as required by Section 01451, CONTRACTOR QUALITY CONTROL. Reports shall be submitted electronically to the Government using E-mail or diskette within 24 hours after the date covered by the report. Use of either mode of submittal shall be coordinated with the Government representative. The Contractor shall also provide the Government a signed, printed copy of the daily CQC report.

1.6.3.2 Deficiency Tracking.

The Contractor shall use QCS to track deficiencies. Deficiencies identified by the Contractor will be numerically tracked using QC punch list items. The Contractor shall maintain a current log of its QC punch list items in the QCS database. The Government will log the deficiencies it has identified using its QA punch list items. The Government's QA punch list items will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of both QC and QA punch list items.

1.6.3.3 Three-Phase Control Meetings

The Contractor shall maintain scheduled and actual dates and times of

preparatory and initial control meetings in QCS.

1.6.3.4 Accident/Safety Tracking.

The Government will issue safety comments, directions, or guidance whenever safety deficiencies are observed. The Government's safety comments will be included in its export file to the Contractor. The Contractor shall regularly update the correction status of the safety comments. In addition, the Contractor shall utilize QCS to advise the Government of any accidents occurring on the jobsite. This brief supplemental entry is not to be considered as a substitute for completion of mandatory reports, e.g., ENG Form 3394 and OSHA Form 200.

1.6.3.5 Features of Work

The Contractor shall include a complete list of the features of work in the QCS database. A feature of work may be associated with multiple pay activities. However, each pay activity (see subparagraph "Pay Activity Data" of paragraph "Finances") will only be linked to a single feature of work.

1.6.3.6 QC Requirements

The Contractor shall develop and maintain a complete list of QC testing, transferred and installed property, and user training requirements in QCS. The Contractor shall update all data on these QC requirements as work progresses, and shall promptly provide this information to the Government via QCS.

1.6.4 Submittal Management

The Government will provide the initial submittal register, ENG Form 4288, SUBMITTAL REGISTER, in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall use QCS to track and transmit all submittals. ENG Form 4025, submittal transmittal form, and the submittal register update, ENG Form 4288, shall be produced using QCS. RMS will be used to update, store and exchange submittal registers and transmittals, but will not be used for storage of actual submittals.

1.6.5 Schedule

The Contractor shall develop a construction schedule consisting of pay activities, in accordance with Contract Clause "Schedules for Construction Contracts", or Section 01320A, PROJECT SCHEDULE, as applicable. This schedule shall be input and maintained in the QCS database either manually or by using the Standard Data Exchange Format (SDEF) (see Section 01320A PROJECT SCHEDULE). The updated schedule data shall be included with each pay request submitted by the Contractor.

1.6.6 Import/Export of Data

QCS includes the ability to export Contractor data to the Government and to import submittal register and other Government-provided data, and schedule data using SDEF.

1.7 IMPLEMENTATION

Contractor use of QCS as described in the preceding paragraphs is mandatory. The Contractor shall ensure that sufficient resources are available to maintain its QCS database, and to provide the Government with regular database updates. QCS shall be an integral part of the Contractor's management of quality control.

1.8 DATA SUBMISSION VIA COMPUTER DISKETTE OR CD-ROM

The Government-preferred method for Contractor's submission of updates, payment requests, correspondence and other data is by E-mail with file attachment(s). For locations where this is not feasible, the Contracting Officer may permit use of computer diskettes or CD-ROM for data transfer. Data on the disks or CDs shall be exported using the QCS built-in export function. If used, diskettes and CD-ROMs will be submitted in accordance with the following:

1.8.1 File Medium

The Contractor shall submit required data on 3-1/2 inch double-sided high-density diskettes formatted to hold 1.44 MB of data, capable of running under Microsoft Windows 95 or newer. Alternatively, CD-ROMs may be used. They shall conform to industry standards used in the United States. All data shall be provided in English.

1.8.2 Disk or CD-ROM Labels

The Contractor shall affix a permanent exterior label to each diskette and CD-ROM submitted. The label shall indicate in English, the QCS file name, full contract number, contract name, project location, data date, name and telephone number of person responsible for the data.

1.8.3 File Names

The Government will provide the file names to be used by the Contractor with the QCS software.

1.9 MONTHLY COORDINATION MEETING

The Contractor shall update the QCS database each workday. At least monthly, the Contractor shall generate and submit an export file to the Government with schedule update and progress payment request. As required in Contract Clause "Payments", at least one week prior to submittal, the Contractor shall meet with the Government representative to review the planned progress payment data submission for errors and omissions. The Contractor shall make all required corrections prior to Government acceptance of the export file and progress payment request. Payment requests accompanied by incomplete or incorrect data submittals will be returned. The Government will not process progress payments until an acceptable QCS export file is received.

1.10 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification.

-- End of Section --

SECTION 01321N

DESIGN-BUILD NETWORK ANALYSIS SCHEDULES (NAS)

PART 1 GENERAL

1.1 DESCRIPTION

The network analysis system shall consist of the network analysis schedule (diagram) and associated reports. The scheduling of all design, procurement and construction shall be the responsibility of the Contractor.

All design and construction increments will be interrelated on a single schedule that represents the entire project duration from Contract Award to the Contract Completion Date. Schedule updates will build upon each other and will include design and construction increments as they are detailed, submitted and accepted. Submission of progress and revision data will be used to measure work progress, aid in the evaluation for requests for time extensions, and to provide the basis of all progress payments. The Critical Path Method (CPM) of network calculation shall be used to generate the project schedule and will utilize the Precedence Diagram Method (PDM) to satisfy both time and cost applications. All progress payment amounts will be derived from and tied to the cost-loaded schedule activities.

For consistency, when scheduling software terminology is used in this specification, the terms in Primavera's scheduling programs are used. Primavera Project Planner, P3, Primavera Project Manager, SureTrak and PrimeContract are registered trademarks or service marks of Primavera Systems, Inc. Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Qualifications; G]

Standard Activity ID Dictionary; G

Design Network Analysis Schedule; G

Construction Network Analysis Schedule; G

Baseline Network Analysis Schedule; G

SD-07 Certificates

Monthly Network Analysis Updates; G

Summary Network; G

SD-11 Closeout Submittals

As-Built Schedule; G

1.3 SCHEDULE ACCEPTANCE

Review comments made by the Government on the Contractor's schedule(s) will not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for scheduling, sequencing, and prosecuting the Work to comply with the requirements of the Contract Documents. Government acceptance extends only to the activities of the Contractor's schedule that the Government has been assigned responsibility for and agrees it is responsible. The Government will also review for contract imposed schedule constraints and conformance, and cost loading of the CPM activities. Comments offered on other parts of the schedule, which the Contractor is assigned responsibility, are offered as a courtesy and are not conditions of Government acceptance; but are for the general conformance with established industry schedule concepts.

1.3.1 Schedule Acceptance Prior to Start of Work

[Unless stipulated otherwise as part of the Contract Award, the design work may be started prior to submittal and acceptance of the Design Network Analysis Schedule by the Government, but acceptance of the Design NAS will be a condition precedent to processing any pay requests submitted by the Contractor.]The Baseline Network Analysis Schedule described in the paragraph entitled "Baseline Network Analysis Schedule" must be submitted and accepted by the Government before the Contractor will be allowed to start work on the construction stage(s) of the contract. Examples of construction stages are, but not limited to; demolition, site work, temporary work for construction, etc.

1.3.2 Acceptance

- a. When the Construction Network Analysis Schedule is submitted and accepted by the Contracting Officer, it will then be considered the "Baseline Network Analysis Schedule". The Baseline Network Analysis Schedule will then be used by the Contractor for planning, organizing, and directing the work; reporting progress; and requesting payment for work accomplished. The schedule will be updated monthly by the Contractor and submitted monthly with the progress pay request to reflect the current status of the work. Submittal and acceptance of the Baseline Network Analysis Schedule and accurate updated schedules accompanying the pay requests are both conditions precedent to processing pay requests. Only bonds will be paid prior to acceptance of the Baseline Schedule(s).
- b. Submittal of the Network, and subsequent schedule updates, will be understood to be the Contractor's representation that the submitted schedule meets all of the requirements of the Contract Documents, accurately reflects the work accomplished, and that Work will be executed in the sequence indicated on the submitted schedule.

1.4 SOFTWARE

The scheduling software that will be utilized by the Government on this

project is Primavera Project Planner (P3) by Primavera Systems, Inc. Notwithstanding any other provision in the contract, schedules submitted for this project must be prepared using either Primavera P3 or Primavera SureTrak (files saved in Concentric P3 format). The Contractor shall provide electronic files saved in a format that is compatible with the Contracting Officer's current software version. Submission of data from another software system where data conversion techniques or software is used to import into Primavera's scheduling software is not acceptable and will be cause for rejection of the submitted schedule.

1.5 QUALIFICATIONS

The Contractor shall designate a part time Scheduler that will be responsible for the development, preparation, and maintenance of an accurate, computerized Network Analysis Schedule. Part time is defined as the Scheduler performing coordination, attending project meetings, and updates for at least 8 hours per work week. The Scheduler shall have previously developed, created and maintained at least 2 previous computerized schedules of similar size and complexity of this contract. A resume outlining the qualifications of the Scheduler shall be submitted for acceptance to the Contracting Officer. If at a later date, the Contracting Officer considers the Contractor's Scheduler to be incompetent or objectionable, the Contractor will propose a new Scheduler, meeting the qualification requirements. Payments will not be processed until an acceptable Scheduler is provided.

]1.6 NETWORK SYSTEM FORMAT

The system shall consist of time scaled logic diagrams and specified reports.

1.6.1 Diagrams

Show the order and interdependence of activities and the sequence in which the work is to be accomplished as planned. The basic concept of a network analysis diagram will be followed to show how the start of a given activity is dependent on the completion of preceding activities and how its completion restricts or restrains the start of following activities. Diagrams shall be organized by Work Phase and sorted by Early Start Date and will show a continuous flow from left to right with no logic (relationship lines) from right to left. With the exception of the Contract Award, Project Start and Project Completion milestone activities, no activities will be open-ended; each activity will have predecessor and successor ties. The diagram shall clearly show the activities of the critical path. Once an activity exists on the schedule it may not be deleted and must remain in the logic. No more than 20 percent of the activities may be critical or near critical. Critical will be defined as having zero days of Total Float. "Near critical" will be defined as having Total Float in the range of 1 to 14 days. Show the following information on the diagrams for each activity:

- a. Activity ID
- b. Activity Description
- c. Original Duration in Work Days
- d. Remaining duration

- e. Actual Duration in Work Days
- f. Early Start Date
- g. Early Finish Date
- h. Total Float

Provide network diagrams on ANSI E sheets. Updated diagrams shall show the date of the latest revision.

1.6.2 Schedule Activity Properties and Level of Detail

Numbering shall be assigned so that, in general, predecessor activity numbers are smaller numerically than the successor activity numbers. Skip numbering shall be used on the network to allow insertion of additional activities for contract modifications and logic changes. The minimum number of construction activities in the final network diagram shall be as determined by the contractor. Activity categories included in the schedule are specified below.

1.6.2.1 Activity Categories

- a. Design Activities: Requirements for the activities related to design shall be included as separate activities in the project schedule. Design activities shall include, but are not limited to; the Notice to Proceed, Contractor's various stages of design, application for and receipt of permits required, Contractor's constructibility reviews, submittal of design packages to Government, Government's design review periods, specified design meetings, transition periods prior to Construction Notice to Proceed, etc. The Government review period shall be from the time the design is received by the Government to the time it is sent back to the Contractor; mail time will not be included in the Government review period. Design activities will be linked to their associated Procurement and/or Construction Activities.

If the Government's action on any submittal is "Disapproved" or "Revise and Resubmit", a new series of Design Activities will be inserted into the schedule. Predecessor for the new design preparation activity will be the original approval activity and the successor of the new approval activity will be the next design step (in-progress or final) activity.

- b. Procurement Activities: Tasks related to the procurement of material or equipment shall be included as separate activities in the project schedule. Examples of procurement activities include, but are not limited to; Material/equipment submittal preparation, submittal and approval of material/equipment; delivery of O&M manuals; material/equipment fabrication and delivery, delivery of extra parts, extra stock, special tools, notification of Government Furnished Material/Equipment delivery requirement, etc. As a minimum, separate procurement activities will be provided for every specification section. If the Contractor intends on using Just-In-Time (JIT) delivery methods, the schedule will show each JIT delivery with relationship tie to the Construction Activity specifically for the JIT delivery. Material and equipment for which payment will be requested in advance of installation shall be cost-loaded with the procurement costs. All

activities within a procurement process/cycle will have a unique identifier in the activity code to show their relationships and will extend to the related construction activities (i.e., CSI Code).

If the Government's action on any submittal is "Disapproved" or "Revise and Resubmit", a new series of Procurement Activities will be inserted into the schedule. Predecessor for the new submittal preparation activity will be the original approval activity and the successor of the new approval activity will be the fabrication/deliver activity for the equipment or material.

- c. Government Activities: Government and other agency activities that could impact progress shall be clearly identified. Government activities include, but are not limited to; Government approved submittal reviews, Government conducted inspections/tests, environmental permit approvals by State regulators, utility outages, Notice(s) to Proceed and delivery of Government Furnished Material/Equipment. Show activities indicating Government furnished materials and equipment utilizing delivery dates indicated in "FAR 52.245-2, Government Property (Fixed-Price Contracts)." Government activities will be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days.
- d. Construction Quality Management (CQM) Activities: CQM Activities will identify the Preparatory Phase and Initial Phase for each Definable Feature of Work identified in the Contractor's Quality Control Plan. These activities will be added to each 3-Week Look Ahead Schedule referenced in the paragraph entitled "THREE-WEEK LOOK AHEAD SCHEDULE" and will also be included in each monthly update referenced in the paragraph entitled "Monthly Network Analysis Updates". The Follow-up Phase will be represented by the Construction Activities in the Baseline Schedule and in the schedule updates.
- e. Construction Activities: Construction activities shall include, but are not limited to: Tasks related to mobilization or demobilization; the installation of temporary or permanent work by tradesman; testing and inspections of installed work by technicians, inspectors or engineers; start-up and testing of equipment; commissioning of building and related systems; scheduling of specified manufacture's representatives; Punch Out Inspection; Pre-Final Inspection, Final Acceptance Inspection; final clean-up; training to be provided; and administrative tasks necessary to start, proceed with, accomplish or finalize the contract. No onsite construction activity shall have a duration in excess of 20 working days. Contractor activities will be driven by calendars that reflect Saturdays, Sundays and all Federal Holidays as non-work days.

1.6.2.2 Project Milestones

Dates shall be shown on the diagram for the start of the project, any contract required interim start and completion dates, contract completion date and other significant milestones.

- a. Project Start Date Milestones: The schedule shall start no earlier than the Contract Award Date and the project duration (Day

- 1) will start on the Notice-to-Proceed (NTP) date. The Contractor shall include as the first milestone in the schedule, an activity named "Contract Award". Another milestone shall be included that will be named "Start Project". The Contract Award and Project Start milestones shall have mandatory start constraint dates equal to the Contract Award and NTP dates, respectively.
- b. Constraint of Last Activity Milestone: The Contractor shall include as the last activity in the project schedule, an activity named "End Project". The "End Project" activity shall have a mandatory finish constraint equal to the contract completion date for the project. Calculation of project updates shall be such that if the finish of the last activity falls after the contract completion date, then the float calculation shall reflect negative float on the critical path.
 - c. Early Project Completion: In the event the Contractor's project schedule shows completion of the project prior to the contract completion date, the Contractor shall include an activity named "Contractor Early Completion". The activity shall be a milestone with an unconstrained date representing the Contractor's Early Completion date.
 - d. Substantial Completion: If the Contractor elects to include an activity for Substantial Completion, then it is agreed that Substantial Completion will be the point in time that the Government considers the project is complete and ready for its intended use. The activity will be named "Substantial Completion". The activity shall be a milestone with an unconstrained date representing the Contractor's Substantial Completion date.
 - e. Phase Start Milestone: The Contractor shall include as the first activity for a project phase, an activity named "Start Phase X", where "X" identifies the phase of work. The "Start Phase X" activity shall have an unconstrained start date equal to the date of the Phase NTP. This unconstrained start date is not a release from contractually required start dates, but is left unconstrained to allow the schedule logic to calculate without hindrance.
 - f. End Phase Milestone: The Contractor shall include as the last activity in a project phase, an activity named "End Phase X" where "X" identifies the phase of work. The "End Phase X" activity shall have an unconstrained late finish date equal to the contract phase completion date. This unconstrained completion date is not a release from contractually required finish dates, but is left unconstrained to allow the schedule logic to calculate without hindrance.
 - g. Early Phase Completion: If the Contractor expects to finish prior to the contract phase completion date, the milestone will show an early finish date equal to the Contractor's early finish date. The name of the activity will be "Early Phase Completion" and will have an unconstrained date representing the Contractor's early phase completion date.

1.6.2.3 Activity Identification (ID) and Description

- a. Standard Activity ID Dictionary: The Contractor shall submit the

coding scheme for Schedule Activity Numbers that shall be used throughout the project. The coding scheme submitted shall list the values for each activity code category and translate those values into project specific designations. Code length shall not exceed 10 characters. Once accepted, the coding scheme will be used for the duration of the project.

- b. Activity Description: Each activity shall have a narrative description consisting of a Verb or work function (e.g.; form, pour, excavate), an Object (e.g.; slab, footing, under floor plumbing), and Area (e.g.; 3rd floor, northeast quadrant, basement).

1.6.2.4 Activity Code Dictionary and Values

The Contractor shall establish the activity codes identified in this specification. The codes will have values assigned that will allow the scheduling program to sort, select, group and organize the activities in the schedule. Activity codes include, but are not limited to, the following codes:

- a. Phase Code: If phasing is specified in the contract, all activities shall be identified in the project schedule by the Phase Code in which the activity occurs. Activities shall not be contained in more than one Phase.
- b. Fast-Track Code: All Activities shall be identified in the project schedule according to the design phase and its corresponding construction increment. An example of activities that would have a common Fast-Track Code is the foundation design activities and the corresponding foundation construction activities. Individual activities shall not be contained in more than one fast-track code.
- c. Area Code: All activities shall be identified in the project schedule by the Area Code in which the activity occurs. Activities shall not be contained in more than one Area Code. Area is defined as distinct separations in construction, such as a story of construction, separate structure, usage or function difference, utility distribution systems, etc.
- d. Responsibility Code: All activities in the project schedule shall be identified with the party responsible to perform the task. Responsibility includes, but is not limited to; the Prime Contractor, subcontracting firm, or Government agency performing a given task. Activities shall not belong to more than one responsible party. The responsible party for each activity shall be identified by a responsibility code. For example, a responsibility code value, "ELEC", may be identified as "Electrical Subcontractor".
- e. CSI Code: All activities in the project schedule shall be identified with its respective 5-digit Specification Section number. Activities shall not belong to more than one Section number. If an activity does not have an applicable CSI Code, (such as "Mobilize"), the code will be "00000".
- f. Drawing Code: All activities in the project schedule shall be identified with its respective project Drawing Code. The Drawing

Code is the Sheet Number on the primary project drawing, which indicates the work to be performed. Activities shall not belong to more than one Drawing Code. Examples of Drawing Codes are "C-10", "C.10" or "C10". The code system will allow organizing all activities by Drawing Code in alpha and numeric order. If an activity does not have an applicable Drawing Code, (such as "Mobilize"), the code will be "00000".

- g. Modification Code: The Modification Code shall identify activities that are modified or added by contract modification. Activities shall not belong to more than one Modification Code. The Government will assign the modification number, which will be shown on the SF 30. Use a shortened version of the modification number for the code (e.g.; A00010 = 010).
- h. Request for Equitable Adjustment (REA) or Claim Code: Activities that are modified or added, as a result of a Contractor's REA or Claim shall be identified by a code generated by the Contractor. Activities shall not belong to more than one REA or Claim Code.

1.6.2.5 Cost and Resource Loading

- a. Cost Loading Activities: Costs for incremental design preparation will be assigned to the respective design phase submittal milestone(s). Equipment costs will be assigned to their respective Procurement Activities (i.e., the delivery milestone activity). Costs for installation of the material/equipment (labor, construction equipment, and temporary materials) will be assigned to their respective Construction Activities. The value of inspection/testing activities will not be less than 10 percent of the total costs for Procurement and Construction Activities. Evenly disperse overhead and profit to each activity over the duration of the project. The total of all cost loaded activities; including costs for material and equipment delivered for installation on the project, and labor and construction equipment loaded construction activities, shall total to 100 percent of the value of the contract.
- b. Quantities and Units of Measure: Each cost loaded activity will have a detailed breakdown of the contract price, giving quantities for each of the various kinds of work, unit prices, etc.
- c. Labor Resource Loading: As part of the Baseline Schedule development each construction activity shall have an estimate of the number of workers per day by trade, hours per day by trade and total expected hours used by trade during the execution of the activity. If no workers are required for an activity, then the activity shall be identified as using zero workers per day. Actual labor resource expended on an activity will be recorded in the monthly updated schedules and will coincide with entries made in the Daily Reports.
- d. Equipment Resource loading: As part of the Baseline Schedule development each construction activity shall have an estimate of the equipment used per day, number of units per day and total expected hours for each piece of equipment used during the duration of the activity. Include a description of the major items of construction equipment planned for each construction activity on the project. The description shall include the year,

make, model, and capacity. If no equipment is required for an activity, then the activity shall be identified as using zero equipment per day. Actual equipment resource expended on an activity will be recorded in the monthly updated schedules and will coincide with entries made in the Daily Reports.

1.6.2.6 Anticipated Weather Delays

Schedule activity duration(s) shall be formulated with allowance for normal adverse weather conditions. Any activity duration, which could be impacted by normally anticipated adverse weather (precipitation, high or low temperature, wind, etc.), due to the time period that the Contractor has scheduled the work, shall include an adjustment to include the anticipated weather delay. The Contractor shall anticipate delay by comparing the contractually imposed environmental restrictions in the Contract Documents to the National Oceanic and Atmospheric Association's (NOAA) historical monthly averages for the NOAA location [at (Enter NOAA Station here)][closest to the project site]. The number of anticipated adverse weather delays allocated to an activity will be reflected in the activity's calendar. A lost workday, due to weather conditions, is defined as a day in which the Contractor's workforce cannot work 50 percent or more of the day. The Contractor shall immediately notify the Contracting Officer when a lost day has occurred due to weather and will record on the Daily Reports, the occurrence of adverse weather and resultant impact to the normally scheduled work. If the number of actual adverse weather delay days exceeds the number of days anticipated, the Contracting Officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days and issue a modification in accordance with the contract clauses.

1.6.2.7 Schedule Software Settings and Restrictions

- a. Activity Constraints: Date/time constraint(s), other than those required by the contract, will not be allowed unless accepted by the Contracting Officer. Contractor will identify any constraints proposed and provide an explanation for the purpose of the constraint in the Narrative Report.
- b. Lags: Lags will not be used when the creation of an activity will perform the same function (e.g., concrete cure time). Lag durations contained in the project schedule shall not have a negative value. Contractor will identify any lag proposed and provide an explanation for the purpose of the lag in the Narrative Report.
- c. Default Progress Data Disallowed: Actual Start and Finish dates shall not be automatically updated by default mechanisms that may be included in the CPM scheduling software system. Actual Start and Actual Finish dates on the CPM schedule shall match the dates provided from Contractor Quality Control and Production Reports. These reports will be the sole basis for updating the schedule. Work activities will be updated by actual work progression rather than being cash flow driven. Actual labor and equipment hours used on activities will be derived from the Daily Reports.
- d. Software Settings: The updating of percent of payment and actual to date of any activity shall be independent functions; program features that calculate one of these parameters from the other shall be disabled. Schedule calculations and Out-of-Sequence

progress (if applicable) shall be handled through Retained Logic, not Progress Override. All activity durations and float values will be shown in days, time will not be shown in the duration display. Date format will be DDDMMYY (i.e., 11DEC02). Default activity type will be set to "Task".

1.6.3 Required Tabular Reports

The following reports will be based on the information in the paragraph entitled "Diagrams" and included with the schedule submittals and in each updated schedule submission provided on disk by the Contractor:

- a. Earned Value Report: Listing all activities having a budget amount and cost. A compilation of total earnings on the project from the notice to proceed to the most recent monthly progress payment request and the difference between the previous request amount and the current payment request amount. Sort report first by resource and then by activity.
- b. Log Report: With each updated schedule submission, provide a computer generated Log Report using a recognized schedule comparison software listing all changes made between the previous schedule and current updated schedule. Identify the name of the previous schedule and name of the current schedule being compared. This report will as a minimum show changes for: Added & Deleted Activities, Original Durations, Remaining Durations, Activity Percent Complete, Total Float, Free Float, Calendars, Descriptions, Constraints (added, deleted or changed), Actual Starts/Finishes, Added/Deleted Resources, Resource Quantities, Costs, Resource Percents, Added/Deleted Relations, Changed Relation Lags, Changed Driving Relations, and Changed Critical Status.
- c. Activity ID Report: By activity number in ascending order showing the current status of all activities.
- d. Total Float Report: List of all activities by total float in ascending order and then in order of activity number.
- e. Early Start Report: By earliest allowable start dates and then in order of activity number.
- f. 30-Day Look Ahead: Activities in progress or scheduled to start or finish within the next 30 calendar days of the project Data Date or is continuing through the 30 day period.
- g. Predecessor/Successor Report: By activity number from lowest to highest, showing preceding and succeeding activity numbers for each activity and showing the current status of each activity.
- h. Labor Staffing Report and Histogram: With each Baseline Network Analysis Schedule submittal and each updated schedule, a planned early and planned late versus actual labor resource report and histogram will be provided. The report and histogram shall be based upon and shall be in agreement with, the number of shifts and crew sizes by craft, in the Baseline Network Analysis Schedule (planned) and the Monthly Network Update (actual). Included in the report will be a tabular listing of each trade that worked on the activities during the construction period.

- i. Equipment Usage Report and Histogram: With each Baseline Network Analysis Schedule submittal and each updated schedule, a planned early and planned late versus actual equipment resource report and histogram will be provided. The report and histogram shall be based upon and shall be in agreement with the equipment allocation in the Baseline Network Analysis Schedule (planned) and the Monthly Network Update (actual). Included in the report will be a tabular listing of equipment (by year, make and model) that worked on the activities during the construction period.

1.7 SUBMISSION AND ACCEPTANCE

1.7.1 Preliminary Meeting

Prior to the preparation of the Construction Network Analysis Schedule for acceptance; the Contracting Officer, Contractor and the scheduler shall participate in a preliminary meeting to discuss the proposed schedule and requirements of this section prior to submission of the network.

1.7.2 Design Network Analysis Schedule

Submit the Design Network Analysis Schedule defining the planned operations during the design phase(s) of the contract. The general (summarized) approach for the construction phase(s) of the project shall also be indicated. Cost of activities expected to be completed or partially completed before submission of the Baseline Network Analysis Schedule shall be included. When the project is being Fast-Tracked, the Design Network Analysis Schedule shall include all fast-tracked design phases, including the required or proposed design submittals within each phase that will occur during the duration of the project. Submit three copies of both the design network diagrams and reports listed in paragraph entitled "Required Tabular Reports." In accordance with paragraph entitled "Monthly Network Analysis Updates" the design network may be used for requesting progress payments for a period not to exceed the design phase(s) of the contract. Submittal and acceptance of the Design Network Analysis Schedule is condition precedent to the processing of the Contractor's pay requests on this schedule. The activities and relationships of the design schedule shall coincide and mesh with the activities of the Baseline Network Analysis Schedule. As part of this submittal, provide the Project Name format (and Project Group Name if used) that will be used by the Contractor to identify initial schedule submittals, updates, fragnets, changes, etc.

1.7.3 Construction Network Analysis Schedule

Submit the complete network analysis schedule and obtain acceptance prior to starting construction work. If the project will be Fast-Tracked, each construction stage will be built upon the previous Fast-Tracked Baseline Schedule (including any interim updates thereto) and accepted prior to starting that stage of the construction work.] Submit three copies of the diagrams described in the paragraph entitled "Diagrams" and the reports listed in the paragraph entitled "Required Tabular Reports". As part of this submittal, provide the Project Name format (and Project Group Name if used) that will be used by the Contractor to identify initial schedule submittals, updates, fragnets, changes, etc. Include 1 copy of the Construction Network Analysis Schedule on electronic media that is acceptable to the Contracting Officer.

1.7.4 Review and Evaluation

After the Government's review(s) of the Network Analysis Schedule, the Contractor shall meet with the Contracting Officer to discuss the review and evaluation of the NAS submittal. Revisions necessary as a result of this review shall be resubmitted for acceptance within 10 calendar days after the meeting.

1.7.5 Baseline Network Analysis Schedule

Once review comments are resolved and the Contracting Officer has accepted the Network Analysis Schedule, the Contractor shall within 5 calendar days furnish:

- a. Two copies of the network diagrams.
- b. Two copies of the reports listed in paragraph entitled "Required Tabular Reports".
- c. Two copies of the Cash Flow S-Curve indicating the cash flow based upon both the projected early and late finish dates.]
- d. Two sets of data disks containing the project schedule shall be provided for the initial submission and every periodic project update. Data shall be submitted on electronic media that is acceptable to the Contracting Officer. A permanent exterior label shall be affixed to each disk submitted. The label shall indicate the type of schedule (Baseline, Update, Recovery, Change, etc.), full contract number, Project Name used to identify project in scheduling software, contract name & location, data status date, diskette number with total number of diskettes in set, software name and version used to run the schedule, and the name and telephone number of person responsible for the schedule.

For major revisions, updates or changes to the network diagrams, once accepted by the Contracting Officer, the Contractor shall submit these same diagrams and reports.

1.7.6 Monthly Network Analysis Updates

At monthly intervals the Contractor and Government representatives will meet to jointly update the project schedule and agree on percentage of payment for each activity progressed during the update period. The purpose of the meeting is to determine progress payment amounts for each activity, allow all parties to evaluate project status at the data date, provide a complete and accurate update of design, procurement and construction progress, create an historical record of the project and establish prediction of completion date(s) based upon current status. The Contractor is responsible to gather all supporting documentation, present the update data for the schedule and record the meeting minutes. All progress payment amounts will be derived from and tied to the cost-loaded schedule activities. Submit at monthly intervals a report of the actual design and construction progress by updating the required reports and the time scaled logic diagram. Meeting to update the schedule and the submission of an error free, acceptable updated schedule to the Government is a condition precedent to the processing of the Contractor's pay request. As a minimum, the following actions will be accomplished during the meeting:

- a. Identify activities started and completed during the previous period and enter the Actual Start and Actual Finish dates. It

will be understood that Actual Start is defined as the date that work begins on an activity with the intent to pursue the work represented by the activity to substantial completion, and Actual Finish is defined as the date that the activity's work is substantially complete to the point that its successor activity(s) may begin.

- b. Show estimated duration (in workdays) to complete each activity started but not completed (remaining duration).
- c. Indicate percentage of cost payable and percent of work complete as separate and independent entries for each activity. The assignment of an Actual Finish date to an activity does not imply that the activity's percent of payment will be stasured to 100%.
- d. Reflect changes in the network diagram. All changes (i.e., remaining duration changes, logic changes, new logic, conformed change orders, new activities, changes due to Conformed Modifications, changes in work sequence, entry of as-built relationship logic, etc.) shall be recorded and a note added to the activity log field. The log shall include as a minimum, the date and reason for the change, and description of the change.
- e. Submit two copies of a Narrative Report describing: 1) Progress made in each area of the project; 2) Changes in the following; activities, original durations, logic interdependencies, milestones, planned sequence of operations, critical path, and resource and loading; 3) Pending items and status thereof, including permits, change orders, and time extensions; 4) Status of Contract Completion Date and interim milestones; 5) Current and anticipated delays (describe cause of the delay and corrective action(s)); and 6) Description of current and future schedule problem areas. Each entry in the narrative report will cite the respective Activity ID and Activity Description.
- f. Submit two copies of the reports listed in paragraph entitled "Required Tabular Reports".
- g. Two hard copies of the network diagrams and two sets of data disks.
- h. Submit two copies of the Update Meeting minutes.

1.7.7 Summary Network

A summary network shall have the same network format as the Baseline Network Analysis Schedule. The summary network will contain a minimal number of activities that represent the general approach of work sequence. The Summary will be a time-scaled logical sequence of Phase Code. The Contractor shall submit a summary network diagram along with the Baseline Network Analysis Schedule. A summary network update shall be submitted every 4 months during the contract duration and immediately following acceptance of each major schedule change. Submit the following:

- a. Two copies of the summary network diagram.
- b. Two copies of the Activity ID Report.
- c. Two copies of the Total Float Report.

- d. Two copies of the Earned Value Report indicating the actual cash flow for the current updated (not summary) network based upon both the early and late start schedules.

11.7.8 As-Built Schedule

As a condition precedent to the release of retention and making final payment, the Contractor shall submit an "As-Built Schedule", which is the last schedule update. The As-Built Schedule shall reflect the exact manner in which the project was actually constructed (including actual start and finish dates, activities, sequences, and logic) and shall be certified by the Contractor's Project Manager and Construction Scheduler as being a true reflection of the way the project was actually constructed. If more than one person filled the position(s) during the course of the project, each person will provide certification for the period of time they were responsible.

1.8 CONTRACT MODIFICATION

When a contract modification to the work is required, submit proposed revisions to the network with a fragnet and a cost proposal for each proposed change. All modifications shall be incorporated into the network analysis system as separately identifiable activities broken down and inserted appropriately on the first update following issuance of a directive to proceed with the change. Submit two copies of the Total Float Report, Log Report and a copy of the proposed Time Impact Analysis on disk, with the cost proposal. Unless the Contracting Officer requests otherwise, only conformed contract modification fragnets will be added into the subsequent monthly updates. All revisions to the current baseline schedule activities that are necessary to further refine the schedule so that the changed work activities can be logically tied to the schedule shall be made. Financial data shall not be incorporated into the schedule until the Contracting Officer signs the contract modification.

1.8.1 Time Impact Analysis:

The Time Impact Analysis method shall be used by the Contracting Officer and Contractor in determining if a time extension or reduction to the contract milestone date(s) is justified. The Contractor shall provide a Time Impact Analysis to the Contracting Officer for any proposed contract change or as support for a Value Engineering Proposal, Variance Request, Claim or Request for Equitable Adjustment by the Contractor. Submit the Time Impact Analysis schedule, reports, etc. on disk and as a printed/plotted hardcopy.

- a. The Contractor shall submit a Time Impact Analysis (TIA) illustrating the influence of each change or delay on the Contract Completion Date or milestones. Unless the Contracting Officer requests an interim update to the schedule, the current monthly updated schedule accepted by the Government shall be used to display the impacts of the change. Unless requested by the Contracting Officer, no other non-conformed changes will be incorporated into the schedule being used to justify the change impact.
- b. Each TIA shall include a Fragmentary Network (fragnet) demonstrating how the Contractor proposes to incorporate the impact into the project schedule. A fragnet is defined as the sequence of new activities and/or activity revisions, logic

relationships and resource changes that are proposed to be added to the existing schedule to demonstrate the influence of impacts to the schedule. The fragnet shall identify the predecessors to the new activities and demonstrate the impacts to successor activities. The Contractor shall provide a hardcopy printout of the fragnet activities and relationships being added and also insert the fragnet into the most current, accepted Monthly Network Analysis Update, run the schedule calculations and submit the impacted schedule with the proposal, claim, etc. Include a narrative report describing the effects of new activities and relationships to interim and contract completion dates, with each TIA. Submit time extension requests with a Time Impact Analysis and three hardcopies of the fragnet, impacted schedule (with fragnet loaded), Total Float Report, Narrative Report and Log Report.

- c. Following the Contractor's receipt of a contract modification on a Standard Form 30 signed by the Government; all changes in the fragnet used to determine impacts, shall be incorporated into the schedule. Changes will occur during the next monthly schedule update meeting.

1.8.2 No Reservation-Of-Rights

All direct costs, indirect costs, and time extensions will be negotiated and made full, equitable and final at the time of modification issuance.

1.9 CHANGES TO THE NETWORK ANALYSIS SCHEDULE

If changes in the method of operating and scheduling are desired, the Contracting Officer shall be notified in writing stating the reasons for the change. If the Contracting Officer considers these changes to be of a major nature, the Contractor may be required to revise and submit for acceptance, without additional cost to the Government, the network diagrams and required reports. A change may be considered of a major nature if the estimated time required or actually used for an activity or the network logic has varied from the original plan to a degree that there is a reasonable doubt as to the effect on the contract completion date(s) or phase completion dates. Changes that affect activities with adequate float time shall be considered a major change when their cumulative effect could extend the contract completion date.

1.10 FLOAT

Use of float suppression techniques, such as; preferential sequencing (arranging critical path through activities more susceptible to Government caused delay), lag logic restraints, zero total or free float constraints, extended activity times, or imposing constraint dates other than as required by the contract, shall be cause for rejection of the project schedule or its updates. The use of Resource Leveling (or similar software features) used for the purpose of artificially adjusting activity durations to consume float and influence the critical path is expressly prohibited.

1.10.1 Definitions of Float

Free Float is the length of time the start of an activity can be delayed without delaying the start of a successor activity. Total Float is the length of time along a given network path that the actual start and finish of activity(s) can be delayed without delaying the project completion date.

Project Float is the length of time between the Contractor's Early Completion (or Substantial Completion or similar activity) and the Contract Completion Date.

1.10.2 Ownership of Float

Float available in the schedule, at any time shall not be considered for the exclusive use of either the Government or the Contractor. During the course of contract execution, any float generated due to the efficiencies of either party is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Efficiencies gained as a result of favorable weather within a calendar month, where the number of days of normally anticipated weather is less than expected, will also contribute to the reserve of float. A schedule showing work completing in less time than the Contract time, and accepted by the Government, will be considered to have Project Float. Project Float will be a resource available to both the Government and the Contractor. No time extensions will be granted nor delay damages paid unless a delay occurs which impacts the Project's critical path, consumes all available float or contingency time, and extends the work beyond the Contract Completion Date.

1.10.3 Negative Float

Negative float will not be a basis for requesting time extensions. Any extension of time will be addressed in accordance with the paragraphs entitled "CONTRACT MODIFICATION". Scheduled completion date(s) that extend beyond the contract[or phase] completion date(s) (evidenced by negative float) may be used in computations for assessment of payment withholdings. The use of this computation is not to be construed as a means of acceleration.

1.11 THREE-WEEK LOOK AHEAD SCHEDULE

To provide a more detailed day-to-day planning of upcoming construction work, the Contractor shall prepare and issue detailed work plans that coordinate with and supplement the above defined network analysis. The work plans shall be keyed to the CPM activity numbers and shall be submitted each week and shall show the project activities that will occur during the current and following two-week interval. Additionally, the critical path activities are to be identified on the 3-Week Look Ahead Schedule. The schedule will be a bar chart type schedule prepared by the Contractor in sufficient detail to define the work to be accomplished, the crews, construction tools and equipment to be used during the current and next two-week interval. The bar charts shall be formatted to allow reproduction on 8 1/2 by 11 sheets. Three copies of the bar chart schedules shall be delivered to the Contracting Officer[not less than 3 work hours prior to the start of the weekly coordination meeting].

[1.12 WEEKLY COORDINATION MEETING

In conjunction with the receipt of the 3-Week Look Ahead Schedule, a coordination meeting will be held each week on-site in the Contracting Officer's conference room to discuss the work schedule. The Contractor shall make a presentation of the previously submitted and current 3-Week Look Ahead Schedule to the Contracting Officer so as to provide an overview of the project's schedule and provide an opportunity to discuss items of coordination. Consideration of materials, crews, and equipment shall be addressed to ascertain their respective availability. The meeting shall

identify actions necessary to provide adherence to the 3-Week Look Ahead Schedule and the overall network for the project defined above. The Contractor will take meeting minutes. All meeting minute entries will be keyed to the schedule activity number(s) being addressed. Within one day of the meeting, the Contractor will provide a draft copy of the meeting minutes to the Contracting Officer for review and comment. Final copies of the minutes containing the comments provided by the Contracting Officer will be issued within 3 days of the meeting.

]1.13 CORRESPONDENCE AND TEST REPORTS

All correspondence (e.g., letters, Requests for Information (RFIs), e-mails, meeting minute items, Production and QC Daily Reports, material delivery tickets, photographs, etc.) shall reference the Schedule Activity Number(s) that are being addressed. All test reports (e.g., concrete, soil compaction, weld, pressure, etc.) shall reference the Schedule Activity Number(s) that are being addressed.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction Submittals

SD-02 Shop Drawings

SD-03 Product Data

SD-04 Samples

SD-05 Design Data

SD-06 Test Reports

SD-07 Certificates

SD-08 Manufacturer's Instructions

SD-09 Manufacturer's Field Reports

SD-10 Operation and Maintenance Data

SD-11 Closeout Submittals

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Designer of Record Approved

Designer of Record approval is required for extensions of design, critical materials, any deviations from the solicitation, the accepted proposal, or the completed design, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction", they are considered to be "shop drawings". The Contractor shall provide the Government the number of copies designated hereinafter of all Designer of Record approved submittals. The Government may review any or all Designer of Record approved submittals for conformance to the Solicitation and Accepted Proposal. The Government will review all submittals designated as deviating from the Solicitation or Accepted Proposal, as described below. Design submittals shall be in accordance with Section 01012 DESIGN AFTER AWARD. Generally, design submittals should be identified as SD-05 DESIGN DATA submittals.

1.2.2 Government Approved

Government approval is required for extensions of design, critical

materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Government approval is required for any deviations from the Solicitation or Accepted Proposal and other items as designated by the Contracting Officer.

Within the terms of the Contract Clause entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

1.2.3 Government Reviewed Design or Extension of Design

The Government will review all design submittals for conformance with the technical requirements of the contract. Section 01012 DESIGN AFTER AWARD covers the design submittal and review process in detail. Government review is required for extension of design construction submittals, used to define contract conformity, and for deviation from the completed design. Review will be only for conformance with the contract requirements. Included are only those construction submittals for which the Designer of Record design documents do not include enough detail to ascertain contract compliance. The Government may, but is not required, to review extensions of design such as structural steel or reinforcement shop drawings.

1.2.4 Information Only

All submittals not requiring Government approval will be for information only. All submittals not requiring Designer of Record or Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above. All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory design, general method of construction, materials, detailing and other information appear to meet the Solicitation and Accepted Proposal. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. The Contractor shall make all corrections required by the Contracting Officer, obtain the Designer of Record's approval when applicable, and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. Any "information only" submittal found to contain errors or unapproved deviations from the Solicitation or Accepted Proposal shall be resubmitted as one requiring "approval" action, requiring both Designer of Record and Government approval. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a

notice in accordance with the Contract Clause "Changes" shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. No payment for materials incorporated in the work will be made if all required Designer of Record or required Government approvals have not been obtained. No payment will be made for any materials incorporated into the work for any conformance review submittals or information only submittals found to contain errors or deviations from the Solicitation or Accepted Proposal.

1.6 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and the Designer of Record, if applicable, and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

1.7 SUBMITTAL REGISTER

The Designer of Record shall develop a complete list of submittals during design. The Designer of Record shall identify required submittals in the specifications, and use the list to prepare the Submittal Register. The list may not be all inclusive and additional submittals may be required by other parts of the contract. The Contractor is required to complete the submittal register and submit it to the Contracting Officer for approval within 30 calendar days after Notice to Proceed. The approved submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period. The submit dates and need dates used in the submittal register shall be coordinated with dates in the Contractor prepared progress schedule. Updates to the submittal register showing the Contractor action codes and actual dates with Government action codes and actual dates shall be submitted monthly or until all submittals have been satisfactorily completed. When the progress schedule is revised, the submittal register shall also be revised and both submitted for approval.

1.8 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 21 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals. An additional 21 calendar days shall be allowed and shown on the register for review and approval of submittals for refrigeration and HVAC control systems.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms are included in the QCS software that the Contractor is required to use for this contract. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 Procedures

The Government will further discuss detailed submittal procedures with the Contractor at the Preconstruction Conference.

1.10.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025 shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

1.11 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

1.12 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Three (3) copies of the submittal will be retained by the Contracting Officer and three (3) copies of the submittal will be returned to the Contractor. If the Government performs a conformance review of other Designer of Record approved submittals, the submittals will be so identified and returned, as described above.

1.13 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so prescribe. For design-build construction the Government will retain all copies of information only submittals.

1.14 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR	
(Firm Name)	
_____ Approved	
_____ Approved with corrections as noted on submittal data and/or attached sheets(s).	
SIGNATURE:	_____
TITLE:	DESIGNER OF RECORD _____
DATE:	_____

For design-build construction, both the Contractor Quality Control System Manager and the Designer of Record shall stamp and sign to certify that the submittal meets contract requirements.

-- End of Section --

SECTION 01355

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AIR FORCE INSTRUCTION

AFI 32-1053 Pest Management Program

ARMY REGULATION

AR 200-5 Pest Management

CODE OF FEDERAL REGULATIONS (CFR)

33 CFR 328	Definitions
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
40 CFR 68	Chemical Accident Prevention Provisions
49 CFR 171 - 178	Hazardous Materials Regulations

CORPS OF ENGINEERS (COE)

EM 385-1-1 Safety and Health Requirements Manual
 (September 1996)

US ARMY CORPS OF ENGINEERS TECHNICAL REPORT

WETLAND MANUAL Corps of Engineers Wetlands Delineation
Manual Technical Report Y-87-1

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.4 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.5 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

1.2.6 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.7 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that

adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.8 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.9 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.10 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Environmental Protection Plan; G,

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment

control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.

f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.

h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

i. Drawing showing the location of borrow areas.

j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1. This plan shall include as a minimum:

1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department and the Facility Environmental Office in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

6. The methods and procedures to be used for expeditious contaminant cleanup.

k. A non-hazardous solid waste disposal plan identifying methods and

locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.

l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.

n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

o. A waste water management plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. If a settling/retention pond is required, the plan shall include the design of the pond including drawings, removal plan, and testing requirements for possible pollutants. If land application will be the method of disposal for the waste water, the plan shall include a sketch showing the location for land application along with a description of the pretreatment methods to be implemented. If surface discharge will be the method of disposal, a copy of the permit and associated documents shall be included as an attachment prior to discharging the waste water. If disposal is to a sanitary sewer, the plan shall include documentation that the Waste Water Treatment Plant Operator has approved the flow rate, volume, and type of discharge.

p. A historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological,

cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

q. A pesticide treatment plan shall be included and updated, as information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation specific requirements. The Contractor shall follow AR 200-5 Pest Management, Chapter 2, Section III "Pest Management Records and Reports" for data required to be reported to the Installation.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements listed at the end of this section.

1.10 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.11 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of

the approved work area.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) which may be reviewed at the Ft Pickett Environmental Office. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of Virginia water quality standards and anti-degradation provisions and the Clean Water Act Section 404, Nation Wide Permit No. [_____].

3.3.2 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and processing and preparation of materials, such as from asphaltic batch plants; shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Virginia rules.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate. Waste materials shall be hauled to the Government landfill site designated by the

Contracting Officer. The Contractor shall comply with site procedures, Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and shall manage and store hazardous waste in accordance with the Installation hazardous waste management plan. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer and the Facility Environmental Office. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility. The Contractor shall coordinate the disposition of hazardous waste with the Facility's Hazardous Waste Manager and the Contracting Officer.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

- a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations.
- b. For discharge of ground water, the Contractor shall surface discharge in accordance with the requirements of the NPDES or State STORM WATER DISCHARGES FROM CONSTRUCTION SITES permit.
- c. Water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing shall be discharged into the sanitary sewer with prior approval and/or notification to the Waste Water Treatment Plant's Operator.

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris. The Contractor shall submit a report to the Contracting Officer on the first working day after each fiscal year quarter, starting the first quarter that non-hazardous solid waste has been generated. The following shall be included in the report:

- a. Construction and Demolition (C&D) Debris Disposed = [_____] in cubic yards or tons, as appropriate.
- b. Construction and Demolition (C&D) Debris Recycled = [_____] in cubic yards or tons, as appropriate.
- c. Total C&D Debris Generated = [_____] in cubic yards or tons, as appropriate.
- d. Waste Sent to Waste-To-Energy Incineration Plant (This amount should not be included in the recycled amount) = [_____] in cubic yards or tons, as appropriate.

3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made

as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.9 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.10 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.10.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended.

3.10.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.10.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS) shall be available for all pesticide products.

3.10.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.11 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.12 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.13 MILITARY MUNITIONS

In the event the Contractor discovers or uncovers military munitions as defined in 40 CFR 260, the Contractor shall immediately stop work in that area and immediately inform the Contracting Officer.

3.14 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.15 CONTAMINATED MEDIA MANAGEMENT

Contaminated environmental media consisting of, but not limited to, ground water, soils, and sediments shall be managed in accordance with the contract provisions.

3.16 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

-- End of Section --

SECTION 01451A

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
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ASTM E 329	(2000b) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
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U.S. ARMY CORPS OF ENGINEERS (USACE)

ER 1110-1-12	Quality Management
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1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction and design operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 60 days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. The Government will consider an interim plan for the first 90 days of operation. ConstructionDesign and construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.1 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all design and construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents subcontractors, designers of record, consultants, architect/engineers (AE), fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project superintendent.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents, subcontractors, designers of record, consultants, architect engineers (AE), offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- e. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)
- f. Procedures for tracking preparatory, initial, and follow-up

control phases and control, verification, and acceptance tests including documentation.

- g. Procedures for tracking design and construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- h. Reporting procedures, including proposed reporting formats.
- i. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 Additional Requirements for Design Quality Control (DQC) Plan

The following additional requirements apply to the Design Quality Control (DQC) plan:

(1) The Contractor's QCP Plan shall provide and maintain a Design Quality Control (DQC) Plan as an effective quality control program which will assure that all services required by this design-build contract are performed and provided in a manner that meets professional architectural and engineering quality standards. As a minimum, all documents shall be technically reviewed by competent, independent reviewers identified in the DQC Plan. The same element that produced the product shall not perform the independent technical review (ITR). The Contractor shall correct errors and deficiencies in the design documents prior to submitting them to the Government.

(2) The Contractor shall include the design schedule in the master project schedule, showing the sequence of events involved in carrying out the project design tasks within the specific contract period. This should be at a detailed level of scheduling sufficient to identify all major design tasks, including those that control the flow of work. The schedule shall include review and correction periods associated with each item. This should be a forward planning as well as a project monitoring tool. The schedule reflects calendar days and not dates for each activity. If the schedule is changed, the Contractor shall submit a revised schedule reflecting the change within 7 calendar days. The Contractor shall include in the DQC Plan the discipline-specific checklists to be used during the design and quality control of each submittal. These completed checklists shall be submitted at each design phase as part of the project documentation. Example checklists can be found in ER 1110-1-12.

(3) The DQC Plan shall be implemented by an Design Quality Control Manager who has the responsibility of being cognizant of and assuring that all documents on the project have been coordinated. This individual shall be a person who has verifiable

engineering or architectural design experience and is a registered professional engineer or architect. The Contractor shall notify the Contracting Officer, in writing, of the name of the individual, and the name of an alternate person assigned to the position.

The Contracting Officer will notify the Contractor in writing of the acceptance of the DQC Plan. After acceptance, any changes proposed by the Contractor are subject to the acceptance of the Contracting Officer.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of design and construction. Acceptance is conditional and will be predicated on satisfactory performance during the design and construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, before start of design or construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The CQC Plan shall be submitted for review a minimum of 21 calendar days prior to the Coordination Meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, design activities, control activities, testing, administration of the system for both onsite and offsite work, and the interrelationship of Contractor's Management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager, a Design Quality Manager, and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority

and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer, graduate architect, or a graduate of construction management, with a minimum of 5 years construction experience on construction similar to this contract. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned no other duties. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: electrical, mechanical, TABS, civil, environmental, submittals clerk. These individuals may be employees of the prime or subcontractor; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix

	Area	Qualifications
a.	Civil	Graduate Civil Engineer with 2 years experience in the type of work being performed on this project or technician with 5 yrs related experience
b.	Mechanical	Graduate Mechanical Engineer with 2 yrs experience or person with 5 yrs related experience
c.	Electrical	Graduate Electrical Engineer with 2 yrs related experience or

Experience Matrix

	Area	Qualifications
		person with 5 yrs related experience
d.	Environmental	Graduate Environmental Engineer with 3 yrs experience
e.	Submittals	Submittal Clerk with 1 yr experience
f.	Testing, Adjusting and Balancing (TAB) Personnel	Specialist must be a member of AABC or an experienced technician of the firm certified by the NEBB.
g.	Design Quality Control Manager	Registered Architect or Professional Engineer

3.4.4 Additional Requirement

In addition to the above experience [and] [and/or] education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered through the Norfolk District.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

Submittals, if needed, shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The CQC organization shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction work as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. Review of provisions that have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum

acceptable workmanship standards. Compare with required sample panels as appropriate.

- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure control activities, including control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work is unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. Testing includes operation and/or acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.
- c. Check test instrument calibration data against certified standards.

- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test shall be given. If approved by the Contracting Officer, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility shall be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge of \$2,500.00 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the following address:

For delivery by mail: [_____]

For other deliveries: [_____]

Coordination for each specific test, exact delivery location, and dates will be made through the Area Office.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the SPECIAL CONTRACT REQUIREMENTS Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government Pre-Final inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph shall be accomplished within the time slated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection cost in accordance with the contract clause titled "Inspection of Construction".

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.

- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List of deficiencies noted, along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Offsite surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section.

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has

been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

-- End of Section --

SECTION 01500

TEMPORARY CONSTRUCTION FACILITIES

1.1 GENERAL REQUIREMENTS

1.1.1 Site Plan

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate if the use of a supplemental or other staging area is desired.

1.1.2 Identification of Employees

The Contractor shall be responsible for furnishing to each employee, and for requiring each employee engaged on the work to display, identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.1.3 Employee Parking

Contractor employees shall park privately owned vehicles in an area designated by the Contracting Officer. This area will be within reasonable walking distance of the construction site. Contractor employee parking shall not interfere with existing and established parking requirements of the military installation.

1.2 AVAILABILITY AND USE OF UTILITY SERVICES

1.2.1 Temporary Electricity

The Contractor shall make all necessary arrangements for obtaining electric power for construction purposes with Southside Electric Cooperative. There shall be no separate payment for electric power for construction purposes or testing. The contractor shall make all payments to Southside Electric Cooperative.

1.2.2 Temporary Water Supplies

The Contractor shall coordinate water usage procedures and payments for construction purposes with the Town of Blackstone Utility Department. At a minimum, the contractor shall provide a meter nad backflow preventer at each temporary connection. There shall be no separate payment for water usage for construction purposes or testing. The contractor shall make payments to the Town of Blackstone.

1.2.3 Sanitation

The Contractor shall provide and maintain within the construction area minimum field-type sanitary facilities approved by the Contracting Officer. Government toilet facilities will not be available to Contractor's personnel.

1.2.4 Telephone

The Contractor shall make arrangements and pay all costs for telephone facilities desired.

1.3 BULLETIN BOARD, PROJECT SIGN, AND PROJECT SAFETY SIGN

1.3.1 Bulletin Board

Immediately upon beginning of work, the Contractor shall provide a weatherproof glass-covered bulletin board not less than 36 by 48 inches in size for displaying the Equal Employment Opportunity poster, a copy of the wage decision contained in the contract, Wage Rate Information poster, and other information approved by the Contracting Officer. The bulletin board shall be located at the project site in a conspicuous place easily accessible to all employees, as approved by the Contracting Officer. Legible copies of the aforementioned data shall be displayed until work is completed. Upon completion of work the bulletin board shall be removed by and remain the property of the Contractor.

1.3.2 Project and Safety Signs

The requirements for the signs, their content, and location shall be as shown on the drawings. The signs shall be erected within 15 days after receipt of the notice to proceed. The data required by the safety sign shall be corrected daily, with light colored metallic or non-metallic numerals. Upon completion of the project, the signs shall be removed from the site.

1.4 PROTECTION AND MAINTENANCE OF TRAFFIC

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.4.1 Haul Roads

The Contractor shall, at its own expense, construct access and haul roads necessary for proper prosecution of the work under this contract. Haul roads shall be constructed with suitable grades and widths; sharp curves,

blind corners, and dangerous cross traffic shall be avoided. The Contractor shall provide necessary lighting, signs, barricades, and distinctive markings for the safe movement of traffic. The method of dust control, although optional, shall be adequate to ensure safe operation at all times. Location, grade, width, and alignment of construction and hauling roads shall be subject to approval by the Contracting Officer. Lighting shall be adequate to assure full and clear visibility for full width of haul road and work areas during any night work operations. Upon completion of the work, haul roads designated by the Contracting Officer shall be removed.

1.4.2 Barricades

The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.5 CONTRACTOR'S TEMPORARY FACILITIES

1.5.1 Administrative Field Offices

The Contractor shall provide and maintain administrative field office facilities within the construction area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.5.2 Storage Area

The Contractor shall construct a temporary 6 foot high chain link fence around trailers and materials. The fence shall include plastic strip inserts, colored green, so that visibility through the fence is obstructed.

Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless such trailers, materials, or equipment are assigned a separate and distinct storage area by the Contracting Officer away from the vicinity of the construction site but within the military boundaries. Trailers, equipment, or materials shall not be open to public view with the exception of those items which are in support of ongoing work on any given day. Materials shall not be stockpiled outside the fence in preparation for the next day's work. Mobile equipment, such as tractors, wheeled lifting equipment, cranes, trucks, and like equipment, shall be parked within the fenced area at the end of each work day.

1.5.3 Supplemental Storage Area

Upon Contractor's request, the Contracting Officer may designate another or supplemental area for the Contractor's use and storage of trailers, equipment, and materials. This area may not be in close proximity of the construction site but shall be within the military boundaries. Fencing of materials or equipment will not be required at this site; however, the Contractor shall be responsible for cleanliness and orderliness of the area used and for the security of any material or equipment stored in this area. Utilities will not be provided to this area by the Government.

1.5.4 Appearance of Trailers

Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the military property.

1.5.5 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse, with construction equipment or other vehicles, grassed or unpaved areas which are not established roadways, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of mud onto paved or established roadways; gravel gradation shall be at the Contractor's discretion. Grass located within the boundaries of the construction site shall be mowed for the duration of the project. Grass and vegetation along fences, buildings, under trailers, and in areas not accessible to mowers shall be edged or trimmed neatly.

1.5.6 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own equipment; in addition, the Contractor shall notify the appropriate law enforcement agency requesting periodic security checks of the temporary project field office.

1.6 GOVERNMENT FIELD OFFICE

Not Required.

1.7 PLANT COMMUNICATION

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. The devices shall be made available for use by Government personnel.

1.8 TEMPORARY PROJECT SAFETY FENCING

As soon as practicable, but not later than 15 days after the date established for commencement of work, the Contractor shall furnish and erect temporary project safety fencing at the work site. The safety fencing shall be a high visibility orange colored, high density polyethylene grid or approved equal, a minimum of 42 inches high, supported and tightly secured to steel posts located on maximum 10 foot centers, constructed at the approved location. The safety fencing shall be maintained by the Contractor during the life of the contract and, upon completion and acceptance of the work, shall become the property of the Contractor and shall be removed from the work site.

1.9 CLEANUP

Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Any dirt or mud which is tracked onto paved or surfaced roadways shall be cleaned away. Materials resulting from

demolition activities which are salvageable shall be stored within the fenced area described above or at the supplemental storage area. Stored material not in trailers, whether new or salvaged, shall be neatly stacked when stored.

1.10 RESTORATION OF STORAGE AREA

Upon completion of the project and after removal of trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse grassed areas shall be removed and the area restored to its original condition, including top soil and seeding as necessary.

-- End of Section --

SECTION 01572

CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 GENERAL1.1 GOVERNMENT POLICY

Government policy is to apply sound environmental principles in the design, construction and use of facilities. As part of the implementation of that policy the Contractor shall: (1) practice efficient waste management when sizing, cutting, and installing products and materials and (2) use all reasonable means to divert construction and demolition waste from landfills and incinerators and to facilitate their recycling or reuse.

1.2 MANAGEMENT

The Contractor shall take a pro-active, responsible role in the management of construction and demolition waste and require all subcontractors, vendors, and suppliers to participate in the effort. Construction and demolition waste includes products of demolition or removal, excess or unusable construction materials, packaging materials for construction products, and other materials generated during the construction process but not incorporated into the work. In the management of waste consideration shall be given to the availability of viable markets, the condition of the material, the ability to provide the material in suitable condition and in a quantity acceptable to available markets, and time constraints imposed by internal project completion mandates. The Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling of waste. Revenues or other savings obtained for salvage, or recycling shall accrue to the Contractor. Firms and facilities used for recycling, reuse, and disposal shall be appropriately permitted for the intended use to the extent required by federal, state, and local regulations.

1.3 PLAN

A waste management plan shall be submitted within 15 days after contract award and prior to initiating any site preparation work. The plan shall include the following:

a. Name of individuals on the Contractor's staff responsible for waste prevention and management.

b. Actions that will be taken to reduce solid waste generation.

c. Description of the specific approaches to be used in recycling/reuse of the various materials generated, including the areas and equipment to be used for processing, sorting, and temporary storage of wastes.

d. Characterization, including estimated types and quantities, of the waste to be generated.

e. Name of landfill and/or incinerator to be used and the estimated costs for use, assuming that there would be no salvage or recycling on the project.

f. Identification of local and regional reuse programs, including non-profit organizations such as schools, local housing agencies, and

organizations that accept used materials such as materials exchange networks and Habitat for Humanity.

g. List of specific waste materials that will be salvaged for resale, salvaged and reused, or recycled. Recycling facilities that will be used shall be identified.

h. Identification of materials that cannot be recycled/reused with an explanation or justification.

i. Anticipated net cost savings determined by subtracting Contractor program management costs and the cost of disposal from the revenue generated by sale of the materials and the incineration and/or landfill cost avoidance.

1.4 RECORDS

Records shall be maintained to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. The records shall be made available to the Contracting Officer during construction, and a copy of the records shall be delivered to the Contracting Officer upon completion of the construction.

1.5 COLLECTION

The necessary containers, bins and storage areas to facilitate effective waste management shall be provided and shall be clearly and appropriately identified. Recyclable materials shall be handled to prevent contamination of materials from incompatible products and materials and separated by one of the following methods:

1.5.1 Source Separated Method.

Waste products and materials that are recyclable shall be separated from trash and sorted into appropriately marked separate containers and then transported to the respective recycling facility for further processing.

1.5.2 Co-Mingled Method.

Waste products and recyclable materials shall be placed into a single container and then transported to a recycling facility where the recyclable materials are sorted and processed.

1.5.3 Other Methods.

Other methods proposed by the Contractor may be used when approved by the Contracting Officer.

1.6 DISPOSAL

Except as otherwise specified in other sections of the specifications, disposal shall be in accordance with the following:

1.6.1 Reuse.

First consideration shall be given to salvage for reuse since little or no re-processing is necessary for this method, and less pollution is created when items are reused in their original form. Sale or donation of waste suitable for reuse shall be considered. Salvaged materials, other than

those specified in other sections to be salvaged and reinstalled, shall not be used in this project.

1.6.2 Recycle.

Waste materials not suitable for reuse, but having value as being recyclable, shall be made available for recycling whenever economically feasible.

1.6.3 Waste.

Materials with no practical use or economic benefit shall be disposed at a landfill or incinerator.

-- End of Section --

SECTION 01670

RECYCLED / RECOVERED MATERIALS

PART 1 GENERAL

1.1 OBJECTIVES

Government procurement policy is to acquire, in a cost effective manner, items containing the highest percentage of recycled and recovered materials practicable consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials. The Environmental Protection Agency (EPA) has designated certain items which must contain a specified percent range of recovered or recycled materials. EPA designated products specified in this contract comply with the stated policy and with the EPA guidelines. The Contractor shall make all reasonable efforts to use recycled and recovered materials in providing the EPA designated products and in otherwise utilizing recycled and recovered materials in the execution of the work.

1.2 EPA DESIGNATED ITEMS INCORPORATED IN THE WORK

Various sections of the specifications contain requirements for materials that have been designated by EPA as being products which are or can be made with recovered or recycled materials. These items, when incorporated into the work under this contract, shall contain at least the specified percentage of recycled or recovered materials unless adequate justification (non-availability) for non-use is provided. When a designated item is specified as an option to a non-designated item, the designated item requirements apply only if the designated item is used in the work.

1.3 EPA PROPOSED ITEMS INCORPORATED IN THE WORK

The items listed in Table 1 have been identified by EPA as being products which are proposed as possible designated items at some time in the future.

It is recommended that these items, when incorporated in the work under this contract, contain the highest practicable percentage of recycled or recovered materials providing specified requirements are also met.

TABLE 1 EPA PROPOSED ITEMS

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
Carpet Backing	--		
Carpet Cushion	--		
Flowable Fill	--		
Railroad Grade			
Crossings/Surfaces	--		
Landscaping Timbers & Posts	Plastic		
Park and Recreational			
Furniture	--		

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
Playground Equipment	--		
Parking Stops	Plastic or Rubber	100	
	Fly Ash (concrete)	--	20-40
	Slag (concrete)	--	25-70
Signage	--		

1.4 EPA LISTED ITEMS USED IN CONDUCT OF THE WORK BUT NOT INCORPORATED IN THE WORK

There are many products listed in 40 CFR 247 which have been designated or proposed by EPA to include recycled or recovered materials that may be used by the Contractor in performing the work but will not be incorporated into the work. These products include office products, temporary traffic control products, and pallets. It is recommended that these non-construction products, when used in the conduct of the work, contain the highest practicable percentage of recycled or recovered materials.

EPA DESIGNATED ITEMS

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
BUILDING INSULATION			
Rock Wool	Slag	--	75
Fiberglass	Glass Cullet	--	20-25
Cellulose Loose-Fill and Spray-On	Postconsumer Paper	75	75
Perlite Composite Board	Postconsumer Paper	23	23
Plastic Rigid Foam, Polyisocyanurate/ Polyurethane:			
Rigid Foam	--	--	9
Foam-in-Place	--	--	5
Glass Fiber Reinforced	--	--	6
Phenolic Rigid Foam	--	--	5
Plastic, Non-Woven Batt	Recovered or Postconsumer Plastics	--	100

NOTES: 1. Recovered materials content levels are based on the weight (not volume) of materials in the insulation core only.

2. Glass cullet in fiberglass insulation shall conform to ASTM D5359.

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
CARPET			
Polyester Carpet Face Fiber	PET	25-100	25-100

NOTES: 1. PET is recovered soda bottles.

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
CEMENT AND CONCRETE			
Concrete	Coal Fly Ash	--	As Specified
	Blast Furnace Slag	--	As Specified

RECOVERED

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>MATERIALS CONTENT (%)</u>
REPROCESSED AND CONSOLIDATED LATEX PAINTS			
Reprocessed Latex Paint			
White, off-white			
Pastel Colors		20	20
Grey, brown, earthtones and other dark colors		50-99	50-99
Consolidated Latex Paint		100	100

NOTE: Percentages apply to reprocessed latex paints used for interior and exterior architectural applications such as wallboard, ceilings, and trim; gutter boards; and concrete, stucco, masonry, wood, and metal surfaces. Percentages apply to consolidated latex paints used for covering graffiti, where color and consistency of performance are not primary concerns.

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
FLOOR TILES			
Floor tiles (heavy duty/commercial use)	Rubber Plastic	90-100	90-100

NOTES: 1. Content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.

2. The use of floor tiles with recovered materials content might be appropriate only for specialty purpose uses (e.g., raised, open-web files for drainage on school kitchen flooring).

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
TOILET DIVIDERS AND PARTITIONS			
Toilet dividers and partitions	Steel	16	20-30
	Plastic	20-100	20-100

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
FIBERBOARD / PAPERBOARD			
Structural fiberboard			80-100
Paminated paperboard	Post Consumer paper	100	100

NOTES: 1. Content levels are based on the weight (not volume) of materials in the insulating core only.

2. Structural fiberboard containing recovered paper shall conform to ASTM C 208.

RECOVERED

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>MATERIALS CONTENT (%)</u>
HYDRAULIC MULCH			
Paper based hydr. mulch	Paper	100	100
Wood based hydr. mulch	Wood and Paper		100

NOTE: Content levels are based on the dry weight of the fiber, exclusive of any dyes, wetting agents, seeds, fertilizer, or other non-cellulose additives.

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>POSTCONSUMER CONTENT (%)</u>	<u>RECOVERED MATERIALS CONTENT (%)</u>
PLASTIC FENCING			
Plastic fencing	Plastic	60-100	90-100

NOTE: Designation includes fencing for use in controlling snow or sand drifting and as a warning/safety barrier in construction or other applications.

NOTE: 1. Content levels are based on the dry weight of the raw materials, exclusive of any additives such as adhesives, binders, or coloring agents.
2. Playground surfaces shall conform to the requirements of ASTM F 1292.
3. Playground surfacing shall comply with the Americans with Disabilities Act.

-- End of Section --

AS-BUILT RECORD DRAWINGS AND SHOP DRAWINGS

PART 1 GENERAL

1.1 AS-BUILT DRAWINGS

The Contractor shall produce the working as-built drawing prints from the design drawings approved by the Government. The working as-built drawing prints shall be kept at the construction site for mark-up by the Contractor to record as as-built conditions. Once approved by the Government, the Contractor shall transfer the information recorded as the working as-built drawings to the final as-built drawings.

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; all other submittals shall be submitted for information only. The following shall be submitted in accordance with section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings; G

Drawings showing final as-built conditions of the project. The final as-built drawing submittal shall consist of the following:

- a. Two (2) complete copies of AutoCad format drawing files on separate compact discs.
- b. One (1) set of mylars.
- c. Two (2) sets of full size prints.

SD-08 Manufacturer's Instructions

CADD Operator Qualifications; G

Documentation of experience, instruction, and certification used to establish the proficiency of the CADD operator providing the as-built CADD drawing files

1.3 WORKING AS-BUILT DRAWINGS

The working as-built drawing prints and working as-built drawing CADD files shall be revised to show the as-built conditions during the prosecution of the project. Changes from the contract plans which are made in the work or additional information discovered or provided in the course of construction shall be adequately and neatly recorded as changes or additions to the original contract drawings.

1.3.1 Content of Working As-Built Drawings

The working as-built drawings shall include, but not be limited to, the following information:

- a. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location of exterior utilities includes actual measured horizontal distances from utilities to permanent facilities/features. These measurements shall be within an accuracy range of 6 inches and shall be shown at sufficient points to permit easy location of utilities for future maintenance purposes. Measurements shall be shown for all changes of direction points and all surface or underground components such as valves, manholes, drop inlets, clean outs, meter, etc. The general depth range of each underground utility line shall be shown (i.e., 3 ft depth. The description of exterior utilities includes the actual quantity, size, and material of utility lines.
- b. The location and dimensions or any changes within the building or structure.
- c. Correct grade alignment of roads, structures, or utilities if any changes were made from contract plans.
- d. Correct elevations if changes were made in site grading.
- e. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.
- f. The topography and grades of all drainage installed or affected as a part of the project construction
- g. Options: Where the contract drawings or specifications allow options, only the option selected for construction shall be shown on the as-built drawings.
- h. Shop drawings containing as-built information shall be incorporated into the working as-built drawings. This additional information may be added to an existing working as-built drawing or may require the addition of a new drawing to the working as-built drawing set.

1.3.2 Quality Control of Working As-Built Drawings

Subject to the approval of the Contracting Officer, a member of the Contractor's Quality Control Organization shall be assigned sole responsibility for the maintenance and currency of working as-built drawings. Any re-assignment of duties concerning the maintenance of the as-built drawings shall be promptly reported to the Contracting Officer.

1.3.3 Withholding for Working As-Built Drawings

The working as-built marked prints shall be jointly reviewed for accuracy

and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings and will continue the monthly deduction until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of the updated drawings.

1.4 FINAL AS-BUILT DRAWINGS

The final as-built drawings shall be the final record of construction as installed and completed by the Contractor and as indicated on the working as-built drawings. All changes, variations, and/or required additions to the contract drawings shall be included. In the event the Contractor accomplishes additional work which changes the as-built conditions of the facility after submission of the final as-built drawings, the Contractor shall furnish revised and/or additional drawings as required to depict as-built conditions. The requirements for these additional drawings shall be the same as for the as-built drawings included in the original submission.

1.4.1 Withholding for Final As-Built Drawings

An item entitled "As-Built Drawings" has been placed in the Bid/Proposal Schedule for work on as-built drawings. The amount for this item has established by the Contracting Officer and does not reflect the actual cost of providing final as-built drawings. This item becomes a part of the overall Contractor's price and the amount indicated in the item will be withheld from payment to the Contractor until the Final As-Built Drawings have been approved and accepted by the Contracting Officer.

PART 2 PRODUCTS (This Part Not Used)

PART 3 EXECUTION

3.1 WORKING AS-BUILT DRAWINGS

The Contractor shall mark up two (2) sets of paper prints by the red-line process to show the as-built conditions. The as-built marked prints shall be kept current on a weekly basis and available on the jobsite at all times. The Contractor shall maintain current CADD drawing files to reflect all changes recorded on the working as-built drawings.

3.1.1 Review of Working As-Built Drawings

3.1.1.1 Review at 50% Construction Complete

One set of the working as-built drawings, one copy of the working as-built CADD files on compact disc, and one set of prints of the working as-built CADD drawings shall be delivered to the Contracting Officer when construction is 50% complete.

3.1.1.2 Review at Final Inspection

One set of the working as-built drawings, one copy of the working as built CADD files on compact disc, and one set of prints of the working as-built CADD drawings shall be delivered to the Contracting Officer for review and approval 30 days prior to scheduling the final inspection. Final inspection shall not be scheduled by the Contracting Officer until working as-built drawings have been received. After completion of the final inspection, the Government will return the copy of the working as-built drawings for corrections. The Contractor shall complete the corrections and return the working as-built drawings to the Contracting Officer within ten (10) calendar days. Upon approval, the corrected working as-built drawings will be returned to the Contractor for use in preparation of the final as-built drawings.

3.2 FINAL AS-BUILT DRAWINGS

After receipt of the approved as-built working drawings, the Contractor shall revise the CADD drawings to reflect the as-built changes to match the approved working as-built drawings

3.2.1 Submittal of Final As-Built Drawings

The Contractor shall have 30 days after final approval of the working as-built drawings to complete and provide the final as-built drawings submittal.

3.3 COMPUTER AIDED DESIGN AND DRAFTING (CADD) DRAWINGS

All as-built CADD drawings shall meet the requirements of section 01780 CLOSEOUT SUBMITTALS

-- End of Section --

SECTION 01780

CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

As-Built Drawings; G

Drawings showing final as-built conditions of the project. The final CADD as-built drawings shall consist of one set of electronic CADD drawing files in the specified format, one set of mylar drawings, 2 sets of blue-line prints of the mylars, and one set of the approved working as-built drawings.

SD-03 Product Data

As-Built Record of Equipment and Materials; G

Two copies of the record listing the as-built materials and equipment incorporated into the construction of the project.

Warranty Management Plan; G

One set of the warranty management plan containing information relevant to the warranty of materials and equipment incorporated into the construction project, including the starting date of warranty of construction. The Contractor shall furnish with each warranty the name, address, and telephone number of each of the guarantor's representatives nearest to the project location.

Warranty Tags;

Two record copies of the warranty tags showing the layout and design.

Final Cleaning;

Two copies of the listing of completed final clean-up items.

1.2 PROJECT RECORD DOCUMENTS

1.2.1 As-Built Drawings

This paragraph covers as-built drawings complete, as a requirement of the contract. The terms "drawings," "contract drawings," "drawing files,"

"working as-built drawings" and "final as-built drawings" refer to contract drawings which are revised to be used for final as-built drawings.

1.2.1.1 Government Furnished Materials

One set of electronic CADD files in the specified software and format revised to reflect all bid amendments will be provided by the Government at the preconstruction conference for projects requiring CADD file as-built drawings.

1.2.1.2 Working As-Built and Final As-Built Drawings

The Contractor shall revise 2 sets of paper drawings by red-line process to show the as-built conditions during the prosecution of the project. These working as-built marked drawings shall be kept current on a weekly basis and at least one set shall be available on the jobsite at all times. Changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes.

Final as-built drawings shall be prepared after the completion of each definable feature of work as listed in the Contractor Quality Control Plan (Foundations, Utilities, Structural Steel, etc., as appropriate for the project). The working as-built marked prints and final as-built drawings will be jointly reviewed for accuracy and completeness by the Contracting Officer and the Contractor prior to submission of each monthly pay estimate. If the Contractor fails to maintain the working and final as-built drawings as specified herein, the Contracting Officer will deduct from the monthly progress payment an amount representing the estimated cost of maintaining the as-built drawings. This monthly deduction will continue until an agreement can be reached between the Contracting Officer and the Contractor regarding the accuracy and completeness of updated drawings. The working and final as-built drawings shall show, but shall not be limited to, the following information:

a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, the as-built drawings shall show, by offset dimensions to two permanently fixed surface features, the end of each run including each change in direction. Valves, splice boxes and similar appurtenances shall be located by dimensioning along the utility run from a reference point. The average depth below the surface of each run shall also be recorded.

b. The location and dimensions of any changes within the building structure.

c. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

d. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor; including but not limited to fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment foundations, etc.

e. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

- f. Changes or modifications which result from the final inspection.
- g. Where contract drawings or specifications present options, only the option selected for construction shall be shown on the final as-built prints.
- h. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, the Contractor shall furnish a contour map of the final borrow pit/spoil area elevations.
- i. Systems designed or enhanced by the Contractor, such as HVAC controls, fire alarm, fire sprinkler, and irrigation systems.
- j. Modifications (change order price shall include the Contractor's cost to change working and final as-built drawings to reflect modifications) and compliance with the following procedures.
 - (1) Directions in the modification for posting descriptive changes shall be followed.
 - (2) A Modification Circle shall be placed at the location of each deletion.
 - (3) For new details or sections which are added to a drawing, a Modification Circle shall be placed by the detail or section title.
 - (4) For minor changes, a Modification Circle shall be placed by the area changed on the drawing (each location).
 - (5) For major changes to a drawing, a Modification Circle shall be placed by the title of the affected plan, section, or detail at each location.
 - (6) For changes to schedules or drawings, a Modification Circle shall be placed either by the schedule heading or by the change in the schedule.
 - (7) The Modification Circle size shall be 1/2 inch diameter unless the area where the circle is to be placed is crowded. Smaller size circle shall be used for crowded areas.

1.2.1.3 Drawing Preparation

The as-built drawings shall be modified as may be necessary to correctly show the features of the project as it has been constructed by bringing the contract set into agreement with approved working as-built prints, and adding such additional drawings as may be necessary. These working as-built marked prints shall be neat, legible and accurate. These drawings are part of the permanent records of this project and shall be returned to the Contracting Officer after approval by the Government. Any drawings damaged or lost by the Contractor shall be satisfactorily replaced by the Contractor at no expense to the Government.

1.2.1.4 Computer Aided Design and Drafting (CADD) Drawings

Only personnel proficient in the preparation of CADD drawings shall be employed to modify the contract drawings or prepare additional new drawings. Additions and corrections to the contract drawings shall be equal in quality and detail to that of the originals. Line colors, line

weights, lettering, layering conventions, and symbols shall be the same as the original line colors, line weights, lettering, layering conventions, and symbols. If additional drawings are required, they shall be prepared using the specified electronic file format applying the same graphic standards specified for original drawings. The title block and drawing border to be used for any new final as-built drawings shall be identical to that used on the contract drawings. Additions and corrections to the contract drawings shall be accomplished using CADD files. The Contractor will be furnished AutoCad Release 2000 or later software and a Windows NT operating system. The electronic files will be supplied on compact disc, read-only memory (CD-ROM). The Contractor shall be responsible for providing all program files and hardware necessary to prepare final as-built drawings. The Contracting Officer will review final as-built drawings for accuracy and the Contractor shall make required corrections, changes, additions, and deletions.

a. CADD colors shall be the "base" colors of red, green, and blue. Color code for changes shall be as follows:

- (1) Deletions (red) - Deleted graphic items (lines) shall be colored red with red lettering in notes and leaders.
- (2) Additions (Green) - Added items shall be drawn in green with green lettering in notes and leaders.
- (3) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes shall be in blue.

b. The Contract Drawing files shall be renamed in a manner related to the contract number (i.e., 98-C-10.DGN) as instructed in the Pre-Construction conference. Marked-up changes shall be made only to those renamed files. All changes shall be made on the layer/level as the original item. There shall be no deletions of existing lines; existing lines shall be over struck in red. Additions shall be in green with line weights the same as the drawing. Special notes shall be in blue on layer #63.

c. When final revisions have been completed, the cover sheet drawing shall show the wording "RECORD DRAWING AS-BUILT" followed by the name of the Contractor in letters at least 3/16 inch high. All other contract drawings shall be marked either "AS-Built" drawing denoting no revisions on the sheet or "Revised As-Built" denoting one or more revisions. Original contract drawings shall be dated in the revision block.

d. Within 20 days for contracts \$5 million and above after Government approval of all of the working as-built drawings for a phase of work, the Contractor shall prepare the final CADD as-built drawings for that phase of work and submit two sets of blue-lined prints of these drawings for Government review and approval. The Government will promptly return one set of prints annotated with any necessary corrections. Within 10 days for contracts \$5 million and above the Contractor shall revise the CADD files accordingly at no additional cost and submit one set of final prints for the completed phase of work to the Government. Within 20 days for contracts \$5 million and above of substantial completion of all phases of work, the Contractor shall submit the final as-built drawing package for the entire project. The submittal shall consist of one set of electronic files on compact disc, read-only memory (CD-ROM), one set of mylars, two sets of blue-line prints and one set of the approved working as-built

drawings. They shall be complete in all details and identical in form and function to the contract drawing files supplied by the Government. Any transactions or adjustments necessary to accomplish this is the responsibility of the Contractor. The Government reserves the right to reject any drawing files it deems incompatible with the customer's CADD system. Paper prints, drawing files and storage media submitted will become the property of the Government upon final approval. Failure to submit final as-built drawing files and marked prints as specified shall be cause for withholding any payment due the Contractor under this contract. Approval and acceptance of final as-built drawings shall be accomplished before final payment is made to the Contractor.

1.2.1.5 Payment

No separate payment will be made for as-built drawings required under this contract, and all costs accrued in connection with such drawings shall be considered a subsidiary obligation of the Contractor.

1.2.2 As-Built Record of Equipment and Materials

The Contractor shall furnish two copies of preliminary record of equipment and materials used on the project 15 days prior to final inspection. This preliminary submittal will be reviewed and returned 2 days after final inspection with Government comments. Two sets of final record of equipment and materials shall be submitted 10 days after final inspection. The designations shall be keyed to the related area depicted on the contract drawings. The record shall list the following data:

RECORD OF DESIGNATED EQUIPMENT AND MATERIALS DATA

Description	Specification Section	Manufacturer and Catalog, Model, and Serial Number	Composition and Size	Where Used
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1.2.3 Final Approved Shop Drawings

The Contractor shall furnish final approved project shop drawings 30 days after transfer of the completed facility.

1.2.4 Construction Contract Specifications

The Contractor shall furnish final as-built construction contract specifications, including modifications thereto, 30 days after transfer of the completed facility.

1.2.5 Real Property Equipment

The Contractor shall furnish a list of installed equipment furnished under this contract. The list shall include all information usually listed on manufacturer's name plate. The "EQUIPMENT-IN-PLACE LIST" shall include, as applicable, the following for each piece of equipment installed: description of item, location (by room number), model number, serial number, capacity, name and address of manufacturer, name and address of equipment supplier, condition, spare parts list, manufacturer's catalog, and warranty. A draft list shall be furnished at time of transfer. The final list shall be furnished 30 days after transfer of the completed facility.

1.3 WARRANTY MANAGEMENT

1.3.1 Warranty Management Plan

The Contractor shall develop a warranty management plan which shall contain information relevant to the clause Warranty of Construction. At least 30 days before the planned pre-warranty conference, the Contractor shall submit the warranty management plan for Government approval. The warranty management plan shall include all required actions and documents to assure that the Government receives all warranties to which it is entitled. The plan shall be in narrative form and contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below shall include due date and whether item has been submitted or was accomplished. Warranty information made available during the construction phase shall be submitted to the Contracting Officer for approval prior to each monthly pay estimate. Approved information shall be assembled in a binder and shall be turned over to the Government upon acceptance of the work. The construction warranty period shall begin on the date of project acceptance and shall continue for the full product warranty period. A joint 4 month and 9 month warranty inspection shall be conducted, measured from time of acceptance, by the Contractor, Contracting Officer and the Customer Representative. Information contained in the warranty management plan shall include, but shall not be limited to, the following:

a. Roles and responsibilities of all personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. Listing and status of delivery of all Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and for all commissioned systems such as fire protection and alarm systems, sprinkler systems, lightning protection systems, etc.

c. A list for each warranted equipment, item, feature of construction or system indicating:

1. Name of item.
2. Model and serial numbers.
3. Location where installed.
4. Name and phone numbers of manufacturers or suppliers.
5. Names, addresses and telephone numbers of sources of spare parts.
6. Warranties and terms of warranty. This shall include one-year overall warranty of construction. Items which have extended warranties shall be indicated with separate warranty expiration dates.
7. Cross-reference to warranty certificates as applicable.
8. Starting point and duration of warranty period.
9. Summary of maintenance procedures required to continue the warranty in force.
10. Cross-reference to specific pertinent Operation and Maintenance manuals.
11. Organization, names and phone numbers of persons to call for warranty service.
12. Typical response time and repair time expected for various warranted equipment.

- d. The Contractor's plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.
- e. Procedure and status of tagging of all equipment covered by extended warranties.
- f. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

1.3.2 Performance Bond

The Contractor's Performance Bond shall remain effective throughout the entire design and construction period.

a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.

c. Following oral or written notification of required construction warranty repair work, the Contractor shall respond in a timely manner. Written verification will follow oral instructions. Failure of the Contractor to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.3.3 Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, the Contractor shall meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. Communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty shall be established/reviewed at this meeting. In connection with these requirements and at the time of the Contractor's quality control completion inspection, the Contractor shall furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact will be located within the local service area of the warranted construction, shall be continuously available, and shall be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.3.4 Contractor's Response to Construction Warranty Service Requirements

Following oral or written notification by the Contracting Officer, the Contractor shall respond to construction warranty service requirements in accordance with the "Construction Warranty Service Priority List" and the three categories of priorities listed below. The Contractor shall submit a

report on any warranty item that has been repaired during the warranty period. The report shall include the cause of the problem, date reported, corrective action taken, and when the repair was completed. If the Contractor does not perform the construction warranty within the timeframes specified, the Government will perform the work and backcharge the construction warranty payment item established.

a. First Priority Code 1. Perform onsite inspection to evaluate situation, and determine course of action within 4 hours, initiate work within 6 hours and work continuously to completion or relief.

b. Second Priority Code 2. Perform onsite inspection to evaluate situation, and determine course of action within 8 hours, initiate work within 24 hours and work continuously to completion or relief.

c. Third Priority Code 3. All other work to be initiated within 3 work days and work continuously to completion or relief.

d. The "Construction Warranty Service Priority List" is as follows:

Code 1-Air Conditioning Systems

- (1) Recreational support.
- (2) Air conditioning leak in part of building, if causing damage.
- (3) Air conditioning system not cooling properly.

Code 1-Doors

- (1) Overhead doors not operational, causing a security, fire, or safety problem.
- (2) Interior, exterior personnel doors or hardware, not functioning properly, causing a security, fire, or safety problem.

Code 3-Doors

- (1) Overhead doors not operational.
- (2) Interior/exterior personnel doors or hardware not functioning properly.

Code 1-Electrical

- (1) Power failure (entire area or any building operational after 1600 hours).
- (2) Security lights
- (3) Smoke detectors

Code 2-Electrical

- (1) Power failure (no power to a room or part of building).
- (2) Receptacle and lights (in a room or part of building).

Code 3-Electrical

Street lights.

Code 1-Gas

- (1) Leaks and breaks.
- (2) No gas to family housing unit or cantonment area.

Code 1-Heat

- (1). Area power failure affecting heat.
- (2). Heater in unit not working.

Code 2-Kitchen Equipment

- (1) Dishwasher not operating properly.

- (2) All other equipment hampering preparation of a meal.

Code 1-Plumbing

- (1) Hot water heater failure.
(2) Leaking water supply pipes.

Code 2-Plumbing

- (1) Flush valves not operating properly.
(2) Fixture drain, supply line to commode, or any water pipe leaking.
(3) Commode leaking at base.

Code 3 -Plumbing

Leaky faucets.

Code 3-Interior

- (1) Floors damaged.
(2) Paint chipping or peeling.
(3) Casework.

Code 1-Roof Leaks

Temporary repairs will be made where major damage to property is occurring.

Code 2-Roof Leaks

Where major damage to property is not occurring, check for location of leak during rain and complete repairs on a Code 2 basis.

Code 2-Water (Exterior)

No water to facility.

Code 2-Water (Hot)

No hot water in portion of building listed.

Code 3-All other work not listed above.

1.3.5 Warranty Tags

At the time of installation, each warranted item shall be tagged with a durable, oil and water resistant tag approved by the Contracting Officer. Each tag shall be attached with a copper wire and shall be sprayed with a silicone waterproof coating. The date of acceptance and the QC signature shall remain blank until project is accepted for beneficial occupancy. The tag shall show the following information.

- a. Type of product/material_____.
- b. Model number_____.
- c. Serial number_____.
- d. Contract number_____.
- e. Warranty period_____from_____to_____.
- f. Inspector's signature_____.
- g. Construction Contractor_____.

- Address_____.
- Telephone number_____.
- h. Warranty contact_____.
- Address_____.
- Telephone number_____.
- i. Warranty response time priority code_____.
- j. WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.

1.4 MECHANICAL TESTING, ADJUSTING, BALANCING, AND COMMISSIONING

Prior to final inspection and transfer of the completed facility; all reports, statements, certificates, and completed checklists for testing, adjusting, balancing, and commissioning of mechanical systems shall be submitted to and approved by the Contracting Officer as specified in applicable technical specification sections.

1.5 OPERATION AND MAINTENANCE MANUALS

Operation manuals and maintenance manuals shall be submitted as specified. Operation manuals and maintenance manuals provided in a common volume shall be clearly differentiated and shall be separately indexed.

1.6 FINAL CLEANING

The premises shall be left broom clean. Stains, foreign substances, and temporary labels shall be removed from surfaces. Carpet and soft surfaces shall be vacuumed. Equipment and fixtures shall be cleaned to a sanitary condition. Filters of operating equipment shall be replaced. Debris shall be removed from roofs, drainage systems, gutters, and downspouts. Paved areas shall be swept and landscaped areas shall be raked clean. The site shall have waste, surplus materials, and rubbish removed. The project area shall have temporary structures, barricades, project signs, and construction facilities removed. A list of completed clean-up items shall be submitted on the day of final inspection.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

-- End of Section --

SECTION 01850

CONTRACT DRAWINGS

PART 1 GENERAL

1.1 AVAILABILITY OF CADD DRAWING FILES

The electronic "Computer-Aided Drafting and Design (CADD)" drawing files will be provided to the Contractor for use in preparation of construction data related to the referenced contract subject to the following terms and conditions.

Data contained on these electronic files shall not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor shall make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor shall, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software.

If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing construction data related to this contract, all previous indicia of ownership (seals, logos, signatures, initials and dates) shall be removed.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

-- End of Section --

SECTION 02220

DEMOLITION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A10.6 (1990) Safety Requirements for Demolition Operations

AIR CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

ARI Guideline K (1997) Containers for Recovered Fluorocarbon Refrigerants

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61-SUBPART M National Emission Standard for Asbestos

40 CFR 82 Protection of Stratospheric Ozone; Refrigerant Recycling

49 CFR 173.301 Shipment of Compressed Gas Cylinders

U.S. DEFENSE LOGISTICS AGENCY (DLA)

DLA 4145.25 (June 2000) Storage and Handling of Liquefied and Compressed Gases and Their Full and Empty Cylinders

U.S. DEPARTMENT OF DEFENSE (DOD)

DOD 4000.25-1-M Requisitioning and Issue Procedures

MIL-STD-129 (Rev. N) Marking for Shipment and Storage

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1 (1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual

1.2 GENERAL REQUIREMENTS

Do not begin demolition until authorization is received from the Contracting Officer. Remove rubbish and debris from the project site; do not allow accumulations inside or outside the buildings. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Rubbish and debris shall be removed from Government property daily, unless otherwise directed, to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be

stored in areas specified by the Contracting Officer. In the interest of occupational safety and health, the work shall be performed in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections. In the interest of conservation, salvage shall be pursued to the maximum extent possible.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only or as otherwise designated. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Work Plan; G,

The procedures proposed for the accomplishment of the work. The procedures shall provide for safe conduct of the work, including procedures and methods to provide necessary supports, lateral bracing and shoring when required, careful removal and disposition of materials specified to be salvaged, protection of property which is to remain undisturbed, coordination with other work in progress, and timely disconnection of utility services. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations in accordance with EM 385-1-1.

SD-07 Certificates

Demolition plan; G

Notifications; G

Notification of Demolition and Renovation forms; G

Submit proposed salvage, demolition and removal procedures to the Contracting Officer for approval before work is started.

SD-11 Closeout Submittals

Receipts

1.4 REGULATORY AND SAFETY REQUIREMENTS

Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," safety requirements shall conform with ANSI A10.6.

1.5 DUST AND DEBRIS CONTROL

Prevent the spread of dust and debris to occupied portions of the building and avoid the creation of a nuisance or hazard in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution.

1.6 PROTECTION

1.6.1 Traffic Control Signs

Where pedestrian and driver safety is endangered in the area of removal work, use traffic barricades with flashing lights. Notify the Contracting Officer prior to beginning such work.

1.6.2 Existing Work

Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The Contractor shall take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government; any damaged items shall be repaired or replaced as approved by the Contracting Officer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements or pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition or removal work. Repairs, reinforcement, or structural replacement must have Contracting Officer approval.

1.6.3 Weather Protection

For portions of the building to remain, protect building interior and materials and equipment from the weather at all times. Where removal of existing roofing is necessary to accomplish work, have materials and workmen ready to provide adequate and temporary covering of exposed areas so as to ensure effectiveness and to prevent displacement.

1.6.4 Trees

Trees within the project site which might be damaged during demolition, and which are indicated to be left in place, shall be protected by a 6 foot high fence. The fence shall be securely erected a minimum of 5 feet from the trunk of individual trees or follow the outer perimeter of branches or clumps of trees. Any tree designated to remain that is damaged during the work under this contract shall be replaced in kind or as approved by the Contracting Officer.

1.6.5 Facilities

Protect electrical and mechanical services and utilities. Where removal of existing utilities and pavement is specified or indicated, provide approved barricades, temporary covering of exposed areas, and temporary services or connections for electrical and mechanical utilities. Floors, roofs, walls, columns, pilasters, and other structural components that are designed and constructed to stand without lateral support or shoring, and are determined to be in stable condition, shall remain standing without additional bracing, shoring, or lateral support until demolished, unless directed otherwise by the Contracting Officer. The Contractor shall ensure that no elements determined to be unstable are left unsupported and shall be responsible for placing and securing bracing, shoring, or lateral supports as may be required as a result of any cutting, removal, or demolition work performed under this contract.

1.6.6 Protection of Personnel

During the demolition work the Contractor shall continuously evaluate the condition of the structure being demolished and take immediate action to protect all personnel working in and around the demolition site. No area, section, or component of floors, roofs, walls, columns, pilasters, or other structural element will be allowed to be left standing without sufficient bracing, shoring, or lateral support to prevent collapse or failure while workmen remove debris or perform other work in the immediate area.

1.7 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair items to be relocated which are damaged or replace damaged items with new undamaged items as approved by the Contracting Officer.

1.9 Required Data

Demolition plan shall include procedures for coordination with other work in progress, a disconnection schedule of utility services, a detailed description of methods and equipment to be used for each operation and of the sequence of operations.

1.10 Environmental Protection

The work shall comply with the requirements of Section 01355 ENVIRONMENTAL PROTECTION.

1.11 USE OF EXPLOSIVES

Use of explosives will not be permitted.

1.12 AVAILABILITY OF WORK AREAS

Areas in which the work is to be accomplished will be available in accordance with the phasing requirements included in the Statement of Work. schedule:

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 EXISTING FACILITIES TO BE REMOVED

3.1.1 Structures

Existing structures indicated shall be removed completely. Interior walls, other than retaining walls and partitions, shall be removed completely. Sidewalks, streets, pavements, curbs, gutters and street light bases shall be removed as indicated.

3.1.2 Utilities and Related Equipment

Remove existing utilities, as indicated and as necessary to support the new work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Contracting Officer. When utility lines are encountered that are not indicated on the drawings, the Contracting Officer shall be notified prior to further work in that area. Remove meters and related equipment and deliver to a location on the Installation in accordance with instructions of the Contracting Officer. If utility lines are encountered that are not shown on drawings, contact the Contracting Officer for further instructions.

3.1.3 Paving and Slabs

Remove concrete and asphaltic concrete paving and slabs including aggregate base to a depth required to facilitate the new design and new finish grade. Provide neat sawcuts at limits of pavement removal as indicated.

3.1.4 Masonry

Sawcut and remove masonry so as to prevent damage to surfaces to remain and to facilitate the installation of new work. Where new masonry adjoins existing, the new work shall abut or tie into the existing construction as specified for the new work.

3.1.5 Concrete

Saw concrete along straight lines to a depth of not less than 2 inches. Make each cut in walls perpendicular to the face and in alignment with the cut in the opposite face. Break out the remainder of the concrete provided that the broken area is concealed in the finished work, and the remaining concrete is sound. At locations where the broken face cannot be concealed, grind smooth or saw cut entirely through the concrete.

3.1.6 Patching

Where removals leave holes and damaged surfaces exposed in the finished work, patch and repair these holes and damaged surfaces to match adjacent finished surfaces. Where new work is to be applied to existing surfaces, perform removals and patching in a manner to produce surfaces suitable for receiving new work. Finished surfaces of patched area shall be flush with the adjacent existing surface and shall match the existing adjacent surface as closely as possible as to texture and finish. Patching shall be as specified and indicated, and shall include:

- a. Holes and depressions caused by previous physical damage or left as a result of removals in existing masonry walls to remain shall be completely filled with an approved masonry patching material, applied in accordance with the manufacturer's printed instructions.
- b. Where existing partitions have been removed leaving damaged or missing resilient tile flooring, patch to match the existing floor tile.
- c. Patch acoustic lay-in ceiling where partitions have been removed. The transition between the different ceiling heights shall be effected by continuing the higher ceiling level over to the first runner on the lower ceiling and closing the vertical opening with

a painted sheet metal strip.

3.1.7 Air Conditioning Equipment

Remove air conditioning equipment without releasing chlorofluorocarbon refrigerants to the atmosphere in accordance with the Clean Air Act Amendment of 1990. Recover all refrigerants prior to removing air conditioning equipment and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)."

3.1.8 Cylinders and Canisters

Remove all fire suppression system cylinders and canisters and dispose of in accordance with the paragraph entitled "Disposal of Ozone Depleting Substance (ODS)."

3.1.9 Locksets on Swinging Doors

The Contractor shall remove all locksets from all swinging doors indicated to be removed and disposed of. Contractor shall give the locksets to the Contracting Officer after their removal.

3.2 FILLING

Holes and other hazardous openings shall be filled in to provide a safe condition.

3.3 DISPOSITION OF MATERIAL

3.3.1 Title to Materials

Except where specified in other sections, all materials and equipment removed, and not reused, shall become the property of the Contractor and shall be removed from Government property. Title to materials resulting from demolition, and materials and equipment to be removed, is vested in the Contractor upon approval by the Contracting Officer of the Contractor's demolition and removal procedures, and authorization by the Contracting Officer to begin demolition. The Government will not be responsible for the condition or loss of, or damage to, such property after contract award. Materials and equipment shall not be viewed by prospective purchasers or sold on the site.

3.3.2 Reuse of Materials and Equipment

Remove and store materials and equipment listed to be reused or relocated to prevent damage, and reinstall as the work progresses.

3.3.3 Salvaged Materials and Equipment

Remove materials and equipment that are indicated to be removed by the Contractor and that are to remain the property of the Government, and deliver to a storage site as directed within 5 miles of the work site.

Contractor shall salvage items and material to the maximum extent possible.

Material salvaged for the Contractor shall be stored as approved by the Contracting Officer and shall be removed from Government property before completion of the contract. Material salvaged for the Contractor shall not be sold on the site.

Salvaged items to remain the property of the Government shall be removed in a manner to prevent damage, and packed or crated to protect the items from damage while in storage or during shipment. Items damaged during removal or storage shall be repaired or replaced to match existing items. Containers shall be properly identified as to contents. The following items reserved as property of the Government shall be delivered to the areas designated: [_____].

The following items reserved as property of the using service shall be removed prior to commencement of work under this contract: ALL EQUIPMENT AND MATERIALS WHICH SUPPORT THE OPERATIONS AND MAINTENANCE MISSION OF THE VaANG IN THE MATES FACILITIES WHICH ARE NOT A PART OF THE ACTUAL PHYSICAL STRUCTURES TO BE DEMOLISHED.

Historical items shall be removed in a manner to prevent damage. The following historical items shall be delivered to the Government for disposition: Corner stones, contents of corner stones, and document boxes wherever located on the site.

Remove and capture all Class I ODS refrigerants in accordance with the Clean Air Act Amendment of 1990, as directed by the Commanding Officer.

3.3.4 Disposal of Ozone Depleting Substance (ODS)

Class I and Class II ODS are defined in Section, 602(a) and (b), of The Clean Air Act. Prevent discharge of Class I and Class II ODS to the atmosphere. Place recovered ODS in cylinders meeting ARI Guideline K suitable for the type ODS (filled to no more than 80 percent capacity) and provide appropriate labeling. Recovered ODS shall be removed from Government property and dispose of in accordance with 40 CFR 82. Products, equipment and appliances containing ODS in a sealed, self-contained system (e.g. residential refrigerators and window air conditioners) shall be disposed of in accordance with 40 CFR 82.

3.3.4.1 Special Instructions

Each container shall have in it no more than one type of ODS. A warning/hazardous label shall be applied to the containers in accordance with Department of Transportation regulations. All cylinders including but not limited to fire extinguishers, spheres, or canisters containing an ODS shall have a tag with the following information:

- a. Activity name and unit identification code
- b. Activity point of contact and phone number
- c. Type of ODS and pounds of ODS contained
- d. Date of shipment
- e. Naval stock number (for information, call (804) 279-4525).

3.3.4.2 Fire Suppression Containers

Fire suppression system cylinders and canisters with electrical charges or initiators shall be deactivated prior to shipment. Also, safety caps shall be used to cover exposed actuation mechanisms and discharge ports on these special cylinders.

3.3.5 Transportation Guidance

Shipment of all ODS containers shall be in accordance with MIL-STD-129, DLA 4145.25 (also referenced one of the following: Army Regulation 700-68, Naval Supply Instruction 4440.128C, Marine Corps Order 10330.2C, and Air Force Regulation 67-12), 49 CFR 173.301, and DOD 4000.25-1-M.

3.3.6 Unsalvageable Material

Unreinforced concrete and excess soil shall be disposed of on Fort Pickett within five miles of the project site. Reinforced concrete, masonry, other combustible material and noncombustible materials shall be disposed of off Government property in an approved disposal area.

3.4 CLEANUP

Debris and rubbish shall be removed from basement and similar excavations. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

3.4.1 Debris and Rubbish

Debris and rubbish shall be removed from basement and similar excavations. Debris shall be removed and transported in a manner that prevents spillage on streets or adjacent areas. Local regulations regarding hauling and disposal shall apply.

-- End of Section --

SECTION 13280A

ASBESTOS ABATEMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- | | |
|------------|---|
| ANSI Z87.1 | (1989; Errata; Z87.1a) Occupational and Educational Eye and Face Protection |
| ANSI Z88.2 | (1992) Respiratory Protection |
| ANSI Z9.2 | (1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
|-------------|--|
| ASTM C 732 | (1995) Aging Effects of Artificial Weathering on Latex Sealants |
| ASTM D 1331 | (1989; R 1995) Surface and Interfacial Tension of Solutions of Surface-Active Agents |
| ASTM D 2794 | (1993; R 1999e1) Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) |
| ASTM D 4397 | (1996) Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications |
| ASTM D 522 | (1993a) Mandrel Bend Test of Attached Organic Coatings |
| ASTM E 119 | (2000) Fire Tests of Building Construction and Materials |
| ASTM E 1368 | (2000) Visual Inspection of Asbestos Abatement Projects |
| ASTM E 736 | (1992) Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members |
| ASTM E 84 | (2000a) Surface Burning Characteristics of Building Materials |

ASTM E 96	(2000) Water Vapor Transmission of Materials
COMPRESSED GAS ASSOCIATION (CGA)	
CGA G-7	(1990) Compressed Air for Human Respiration
CGA G-7.1	(1997) Commodity Specification for Air
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)	
NFPA 701	(1999) Methods of Fire Tests for Flame-Resistant Textiles and Films
NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)	
NIOSH 84-100	(1984; Supple 1985, 1987, 1988 & 1990) NIOSH Manual of Analytical Methods
U.S. ARMY CORPS OF ENGINEERS (USACE)	
EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)	
EPA 340/1-90/018	(1990) Asbestos/NESHAP Regulated Asbestos Containing Materials Guidance
EPA 340/1-90/019	(1990) Asbestos/NESHAP Adequately Wet Guidance
EPA 560/5-85-024	(1985) Guidance for Controlling Asbestos-Containing Materials in Buildings
U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)	
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 61	National Emission Standards for Hazardous Air Pollutants
40 CFR 763	Asbestos
42 CFR 84	Approval of Respiratory Protective Devices
49 CFR 107	Hazardous Materials Program Procedures
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

49 CFR 173

Shippers - General Requirements for
Shipments and Packagings

UNDERWRITERS LABORATORIES (UL)

UL 586

(1996; Rev thru Aug 1999) High-Efficiency,
Particulate, Air Filter Units

1.2 DEFINITIONS

- a. Adequately Wet: A term defined in 40 CFR 61, Subpart M, and EPA 340/1-90/019 meaning to sufficiently mix or penetrate with liquid to prevent the release of particulate. If visible emissions are observed coming from asbestos-containing material (ACM), then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wetted.
- b. Aggressive Method: Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact asbestos-containing material (ACM).
- c. Amended Water: Water containing a wetting agent or surfactant with a surface tension of at least 29 dynes per square centimeter when tested in accordance with ASTM D 1331.
- d. Asbestos: Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.
- e. Asbestos-Containing Material (ACM): Any materials containing more than one percent asbestos.
- f. Asbestos Fiber: A particulate form of asbestos, 5 micrometers or longer, with a length-to-width ratio of at least 3 to 1.
- g. Authorized Person: Any person authorized by the Contractor and required by work duties to be present in the regulated areas.
- h. Building Inspector: Individual who inspects buildings for asbestos and has EPA Model Accreditation Plan (MAP) "Building Inspector" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- i. Certified Industrial Hygienist (CIH): An Industrial Hygienist certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.
- j. Class I Asbestos Work: Activities defined by OSHA involving the removal of thermal system insulation (TSI) and surfacing ACM.
- k. Class II Asbestos Work: Activities defined by OSHA involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos - containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Certain "incidental" roofing materials such as mastic, flashing and

cements when they are still intact are excluded from Class II asbestos work. Removal of small amounts of these materials which would fit into a glovebag may be classified as a Class III job.

- l. Class III Asbestos Work: Activities defined by OSHA that involve repair and maintenance operations, where ACM, including TSI and surfacing ACM, is likely to be disturbed. Operations may include drilling, abrading, cutting a hole, cable pulling, crawling through tunnels or attics and spaces above the ceiling, where asbestos is actively disturbed or asbestos-containing debris is actively disturbed.
- m. Class IV Asbestos Work: Maintenance and custodial construction activities during which employees contact but do not disturb ACM and activities to clean-up dust, waste and debris resulting from Class I, II, and III activities. This may include dusting surfaces where ACM waste and debris and accompanying dust exists and cleaning up loose ACM debris from TSI or surfacing ACM following construction.
- n. Clean room: An uncontaminated room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.
- o. Competent Person: In addition to the definition in 29 CFR 1926, Section .32(f), a person who is capable of identifying existing asbestos hazards as defined in 29 CFR 1926, Section .1101, selecting the appropriate control strategy, has the authority to take prompt corrective measures to eliminate them and has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- p. Contractor/Supervisor: Individual who supervises asbestos abatement work and has EPA Model Accreditation Plan "Contractor/Supervisor" training; accreditation required by 40 CFR 763, Subpart E, Appendix C.
- q. Critical Barrier: One or more layers of plastic sealed over all openings into a regulated area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a regulated area from migrating to an adjacent area.
- r. Decontamination Area: An enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- s. Demolition: The wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.
- t. Disposal Bag: A 6 mil thick, leak-tight plastic bag, pre-labeled in accordance with 29 CFR 1926, Section .1101, used for transporting asbestos waste from containment to disposal site.
- u. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater

than the amount which can be contained in 1 standard sized glovebag or waste bag, not larger than 60 inches in length and width in order to access a building component.

- v. Equipment Room or Area: An area adjacent to the regulated area used for the decontamination of employees and their equipment.
- w. Employee Exposure: That exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- x. Fiber: A fibrous particulate, 5 micrometers or longer, with a length to width ratio of at least 3 to 1.
- y. Friable ACM: A term defined in 40 CFR 61, Subpart M and EPA 340/1-90/018 meaning any material which contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent, as determined by a method other than point counting by PLM, the asbestos content is verified by point counting using PLM.
- z. Glovebag: Not more than a 60 by 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.
- aa. High-Efficiency Particulate Air (HEPA) Filter: A filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.
- bb. Homogeneous Area: An area of surfacing material or thermal system insulation that is uniform in color and texture.
- cc. Industrial Hygienist: A professional qualified by education, training, and experience to anticipate, recognize, evaluate, and develop controls for occupational health hazards.
- dd. Intact: ACM which has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. Removal of "intact" asphaltic, resinous, cementitious products does not render the ACM non-intact simply by being separated into smaller pieces.
- ee. Model Accreditation Plan (MAP): USEPA training accreditation requirements for persons who work with asbestos as specified in 40 CFR 763, Subpart E, Appendix C.
- ff. Modification: A changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system.
- gg. Negative Exposure Assessment: A demonstration by the Contractor to show that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limits (PELs).
- hh. NESHAP: National Emission Standards for Hazardous Air

Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61, Subpart M.

- ii. Nonfriable ACM: A NESHAP term defined in 40 CFR 61, Subpart M and EPA 340/1-90/018 meaning any material containing more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Subpart E, Appendix A, Section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.
- jj. Nonfriable ACM (Category I): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90/018 meaning asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy.
- kk. Nonfriable ACM (Category II): A NESHAP term defined in 40 CFR 61, Subpart E and EPA 340/1-90/018 meaning any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos, as determined using the methods specified in 40 CFR 763, Subpart F, Appendix A, Section 1, Polarized Light Microscopy, that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.
- ll. Permissible Exposure Limits (PELs):
 - (1) PEL-Time weighted average(TWA): Concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8 hour time weighted average (TWA), as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH 84-100 analytical method 7400.
 - (2) PEL-Excursion Limit: An airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes as determined by the method prescribed in 29 CFR 1926, Section .1101, Appendix A, or the current version of NIOSH 84-100 analytical method 7400.
- mm. Regulated Area: An OSHA term defined in 29 CFR 1926, Section .1101 meaning an area established by the Contractor to demarcate areas where Class I, II, and III asbestos work is conducted; also any adjoining area where debris and waste from such asbestos work accumulate; and an area within which airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limit.
- nn. Removal: All operations where ACM is taken out or stripped from structures or substrates, and includes demolition operations.
- oo. Repair: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM attached to structures or substrates. If the amount of asbestos so "disturbed" cannot be contained in 1 standard glovebag or waste bag, Class I precautions are required.
- pp. Spills/Emergency Cleanups: Cleanup of sizable amounts of asbestos waste and debris which has occurred, for example, when

water damage occurs in a building, and sizable amounts of ACM are dislodged. A Competent Person evaluates the site and ACM to be handled, and based on the type, condition and extent of the dislodged material, classifies the cleanup as Class I, II, or III.

Only if the material was intact and the cleanup involves mere contact of ACM, rather than disturbance, could there be a Class IV classification.

- qq. Surfacing ACM: Asbestos-containing material which contains more than 1% asbestos and is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, or other purposes.
- rr. Thermal system insulation (TSI) ACM: ACM which contains more than 1% asbestos and is applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain or water condensation.
- ss. Transite: A generic name for asbestos cement wallboard and pipe.
- tt. Worker: Individual (not designated as the Competent Person or a supervisor) who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926, Section .1101, to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation required by 40 CFR 763, Subpart E, Appendix C, if required by the OSHA Class of work to be performed or by the state where the work is to be performed.

1.3 DESCRIPTION OF WORK

The work covered by this section includes the [removal] [encapsulation] [encasement][enclosure] [repair] of asbestos-containing materials (ACM) which are encountered during [demolition] [alteration] [maintenance] [renovation] [spill/emergency cleanup] [housekeeping] activities associated with this project and describes procedures and equipment required to protect workers and occupants of the regulated area from contact with airborne asbestos fibers and ACM dust and debris. Activities include OSHA [Class I] [Class II] [Class III] [Class IV] work operations involving ACM. The work also includes containment, storage, transportation and disposal of the generated ACM wastes. More specific operational procedures shall be detailed in the required Accident Prevention Plan and its subcomponents, the Asbestos Hazard Abatement Plan and Activity Hazard Analyses required in paragraph SAFETY AND HEALTH PROGRAM AND PLANS.

1.3.1 Abatement Work Tasks

The specific ACM to be abated is identified on the detailed plans and project drawings. A summary of work task data elements for each individual ACM abatement work task to include the appropriate RESPONSE ACTION DETAIL SHEET (item to be abated and methods to be used) and SET-UP DETAIL SHEETS (containment techniques to include safety precautions and methods) is included in Table 1, "Individual Work Task Data Elements" at the end of this section.

1.3.2 Unexpected Discovery of Asbestos

For any previously untested building components suspected to contain asbestos and located in areas impacted by the work, the Contractor shall

notify the Contracting Officer (CO) who will have the option of ordering up to 15 bulk samples to be obtained at the Contractor's expense and delivered to a laboratory accredited under the National Institute of Standards and Technology (NIST) "National Voluntary Laboratory Accreditation Program (NVLAP)" and analyzed by PLM at no additional cost to the Government. Any additional components identified as ACM that have been approved by the Contracting Officer for removal shall be removed by the Contractor and will be paid for by an equitable adjustment to the contract price under the CONTRACT CLAUSE titled "changes". Sampling activities undertaken to determine the presence of additional ACM shall be conducted by personnel who have successfully completed the EPA Model Accreditation Plan (MAP) "Building Inspector" training course required by 40 CFR 763, Subpart E, Appendix C.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Respiratory Protection Program; G, [_____]

Records of the respirator program.

Cleanup and Disposal; G, [_____]

Waste shipment records. Weigh bills and delivery tickets shall be furnished for information only.

Detailed Drawings; G, [_____]

Descriptions, detail project drawings, and site layout to include worksite containment area techniques as prescribed on applicable SET-UP DETAIL SHEETS, local exhaust ventilation system locations, decontamination units and load-out units, other temporary waste storage facility, access tunnels, location of temporary utilities (electrical, water, sewer) and boundaries of each regulated area.

Materials and Equipment; G

Manufacturer's catalog data for all materials and equipment to be used in the work, including brand name, model, capacity, performance characteristics and any other pertinent information. Test results and certificates from the manufacturer of encapsulants substantiating compliance with performance requirements of this specification. Material Safety Data Sheets for all chemicals to be used onsite in the same format as implemented in the Contractor's HAZARD COMMUNICATION PROGRAM. Data shall include, but shall not be limited to, the following items:

- a. High Efficiency Filtered Air (HEPA) local exhaust equipment
- b. Vacuum cleaning equipment

- c. Pressure differential monitor for HEPA local exhaust equipment
- d. Air monitoring equipment
- e. Respirators
- f. Personal protective clothing and equipment
 - (1) Coveralls
 - (2) Underclothing
 - (3) Other work clothing
 - (4) Foot coverings
 - (5) Hard hats
 - (6) Eye protection
 - (7) Other items required and approved by Contractors Designated IH and Competent Person
- g. Glovebag
- h. Duct Tape
- i. Disposal Containers
 - (1) Disposal bags
 - (2) Fiberboard drums
 - (3) Paperboard boxes
- j. Sheet Plastic
 - (1) Polyethylene Sheet - General
 - (2) Polyethylene Sheet - Flame Resistant
 - (3) Polyethylene Sheet - Reinforced
- k. Wetting Agent
 - (1) Amended Water
 - (2) Removal encapsulant
- l. Strippable Coating
- m. Prefabricated Decontamination Unit
- n. Other items
- o. Chemical encapsulant
- p. Chemical encasement materials
- q. Material Safety Data Sheets (for all chemicals proposed)

Qualifications; G, [_____]

A written report providing evidence of qualifications for personnel, facilities and equipment assigned to the work.

Training Program; [____], [_____]

A copy of the written project site-specific training material as indicated in 29 CFR 1926, Section .1101 that will be used to train onsite employees. The training document shall be signed by the Contractor's Designated IH and Competent Person.

Medical Requirements; G

Physician's written opinion.

Encapsulants; G, [_____]

Certificates stating that encapsulants meet the applicable specified performance requirements.

SD-06 Test Reports

Exposure Assessment and Air Monitoring; G, [_____]

Initial exposure assessments, negative exposure assessments, air-monitoring results and documentation.

Local Exhaust Ventilation; G

Pressure differential recordings.

Licenses, Permits and Notifications; G, [_____]

Licenses, permits, and notifications.

SD-07 Certificates

Vacuum, Filtration and Ventilation Equipment; G

Manufacturer's certifications showing compliance with ANSI Z9.2 for:

- a. Vacuums.
- b. Water filtration equipment.
- c. Ventilation equipment.
- d. Other equipment required to contain airborne asbestos fibers.

1.5 QUALIFICATIONS

1.5.1 Written Qualifications and Organization Report

The Contractor shall furnish a written qualifications and organization report providing evidence of qualifications of the Contractor, Contractor's Project Supervisor, Designated Competent Person, supervisors and workers; Designated IH (person assigned to project and firm name); independent testing laboratory (including name of firm, principal, and analysts who will perform analyses); all subcontractors to be used including disposal transportation and disposal facility firms, subcontractor supervisors, subcontractor workers; and any others assigned to perform asbestos abatement and support activities. The report shall include an organization chart showing the Contractor's staff organization for this project by name and title, chain of command and reporting relationship with all

subcontractors. The report shall be signed by the Contractor, the Contractor's onsite project manager, Designated Competent Person, Designated IH, designated testing laboratory and the principals of all subcontractors to be used. The Contractor shall include the following statement in the report: "By signing this report I certify that the personnel I am responsible for during the course of this project fully understand the contents of 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and the federal, state and local requirements specified in paragraph SAFETY AND HEALTH PROGRAM AND PLANS for those asbestos abatement activities that they will be involved in."

1.5.2 Specific Requirements

The Contractor shall designate in writing, personnel meeting the following qualifications:

- a. Designated Competent Person: The name, address, telephone number, and resume of the Contractor's Designated Competent Person shall be provided. Evidence that the full-time Designated Competent Person is qualified in accordance with 29 CFR 1926, Sections .32 and .1101, has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and is experienced in the administration and supervision of asbestos abatement projects, including exposure assessment and monitoring, work practices, abatement methods, protective measures for personnel, setting up and inspecting asbestos abatement work areas, evaluating the integrity of containment barriers, placement and operation of local exhaust systems, ACM generated waste containment and disposal procedures, decontamination units installation and maintenance requirements, site safety and health requirements, notification of other employees onsite, etc. The duties of the Competent Person shall include the following: controlling entry to and exit from the regulated area; supervising any employee exposure monitoring required by 29 CFR 1926, Section .1101; ensuring that all employees working within a regulated area wear the appropriate personal protective equipment (PPE), are trained in the use of appropriate methods of exposure control, and use the hygiene facilities and decontamination procedures specified; and ensuring that engineering controls in use are in proper operating conditions and are functioning properly. The Designated Competent Person shall be responsible for compliance with applicable federal, state and local requirements, the Contractor's Accident Prevention Plan and Asbestos Hazard Abatement Plan. The Designated Competent Person shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that this person has a minimum of 2 years of on-the-job asbestos abatement experience relevant to OSHA competent person requirements. The Designated Competent Person shall be onsite at all times during the conduct of this project.
- b. Project and Other Supervisors: The Contractor shall provide the name, address, telephone number, and resume of the Project Supervisor and other supervisors who have responsibility to implement the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses, the authority

to direct work performed under this contract and verify compliance, and have EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C. The Project Supervisor and other supervisors shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Contractor shall submit evidence that the Project Supervisor has a minimum of 2 years of on-the-job asbestos abatement experience relevant to project supervisor responsibilities and the other supervisors have a minimum of 1 year on-the-job asbestos abatement experience commensurate with the responsibilities they will have on this project.

- c. Designated Industrial Hygienist: The Contractor shall provide the name, address, telephone number, resume and other information specified below for the Industrial Hygienist (IH) selected to prepare the Contractor's Asbestos Hazard Abatement Plan, prepare and perform training, direct air monitoring and assist the Contractor's Competent Person in implementing and ensuring that safety and health requirements are complied with during the performance of all required work. The Designated IH shall be a person who is [board certified in the practice of industrial hygiene] [or] [board eligible (meets all education and experience requirements)] as determined and documented by the American Board of Industrial Hygiene (ABIH), has EPA Model Accreditation Plan (MAP) "Contractor/Supervisor" training accreditation required by 40 CFR 763, Subpart E, Appendix C, and has a minimum of 2 years of comprehensive experience in planning and overseeing asbestos abatement activities. The Designated IH shall provide, and the Contractor shall submit, the "Contractor/Supervisor" course completion certificate and the most recent certificate for required refresher training with the employee "Certificate of Worker Acknowledgment" required by this paragraph. The Designated IH shall be completely independent from the Contractor according to federal, state, or local regulations; that is, shall not be a Contractor's employee or be an employee or principal of a firm in a business relationship with the Contractor negating such independent status. A copy of the Designated IH's current valid ABIH certification shall be included. The Designated IH shall [be onsite at all times] [visit the site at least [_____] per [month] [week]] for the duration of asbestos activities and shall be available for emergencies. In addition, the Designated IH shall prepare, and the Contractor shall submit, the name, address, telephone numbers and resumes of additional IH's and industrial hygiene technicians (IHT) who will be assisting the Designated IH in performing onsite tasks. IHs and IHTs supporting the Designated IH shall have a minimum of 2 years of practical onsite asbestos abatement experience. The formal reporting relationship between the Designated IH and the support IHs and IHTs, the Designated Competent Person, and the Contractor shall be indicated.
- d. Asbestos Abatement Workers: Asbestos abatement workers shall meet the requirements contained in 29 CFR 1926, Section .1101, 40 CFR 61, Subpart M, and other applicable federal, state and local requirements. Worker training documentation shall be provided as

required on the "Certificate of Workers Acknowledgment" in this paragraph.

- e. Worker Training and Certification of Worker Acknowledgment: Training documentation will be required for each employee who will perform OSHA Class I, Class II, Class III, or Class IV asbestos abatement operations. Such documentation shall be submitted on a Contractor generated form titled "Certificate of Workers Acknowledgment", to be completed for each employee in the same format and containing the same information as the example certificate at the end of this section. Training course completion certificates (initial and most recent update refresher) required by the information checked on the form shall be attached.
- f. Physician: The Contractor shall provide the name, medical qualifications, address, telephone number and resume of the physician who will or has performed the medical examinations and evaluations of the persons who will conduct the asbestos abatement work tasks. The physician shall be currently licensed by the state where the workers will be or have been examined, have expertise in pneumoconiosis and shall be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1926, Section .1101 and paragraph MEDICAL REQUIREMENTS. The physician shall be familiar with the site's hazards and the scope of this project.
- g. First Aid and CPR Trained Persons: The names of at least 2 persons who are currently trained in first aid and CPR by the American Red Cross or other approved agency shall be designated and shall be onsite at all times during site operations. They shall be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030 and shall be included in the Contractor's Bloodborne Pathogen Program. These persons may perform other duties but shall be immediately available to render first aid when needed. A copy of each designated person's current valid First Aid and CPR certificate shall be provided.
- h. Independent Testing Laboratory: The Contractor shall provide the name, address and telephone number of the independent testing laboratory selected to perform the sample analyses and report the results. The testing laboratory shall be completely independent from the Contractor as recognized by federal, state or local regulations. Written verification of the following criteria, signed by the testing laboratory principal and the Contractor, shall be submitted:
 - (1) Phase contrast microscopy (PCM): The laboratory is fully equipped and proficient in conducting PCM of airborne samples using the methods specified by 29 CFR 1926, Section .1101, OSHA method ID-160, the most current version of NIOSH 84-100 Method 7400, and NIOSH 84-100 Method 7402, transmission electron microscopy (TEM); the laboratory is currently judged proficient (classified as acceptable) in counting airborne asbestos samples by PCM by successful participation in each of the last 4 rounds in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program; the names of the selected microscopists who will analyze airborne samples by PCM with

verified documentation of their proficiency to conduct PCM analyses by being judged proficient in counting samples as current participating analysts in the AIHA PAT Program, and having successfully completed the Asbestos Sampling and Analysis course (NIOSH 582 or equivalent) with a copy of course completion certificate provided; when the PCM analysis is to be conducted onsite, documentation shall be provided certifying that the onsite analyst meets the same requirements.

(2) Polarized light microscopy (PLM): The laboratory is fully equipped and proficient in conducting PLM analyses of suspect ACM bulk samples in accordance with 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for bulk asbestos analysis and will use analysts (names shall be provided) with demonstrated proficiency to conduct PLM to include its application to the identification and quantification of asbestos content.

(3) Transmission electron microscopy (TEM): The laboratory is [fully equipped and proficient in conducting TEM analysis of airborne samples using the mandatory method specified by 40 CFR 763, Subpart E, Appendix E; the laboratory is currently accredited by NIST under the NVLAP for airborne sample analysis of asbestos by TEM; the laboratory will use analysts (names shall be provided) that are currently evaluated as competent with demonstrated proficiency under the NIST NVLAP for airborne sample analysis of asbestos by TEM.] [proficient in conducting analysis for low asbestos concentration, enhanced analysis of floor tiles and bulk materials where multiple layers are present, using an improved EPA test method titled, "Method for the Determination of Asbestos in Bulk Building Materials".]

(4) PCM/TEM: The laboratory is fully equipped and each analyst (name shall be provided) possesses demonstrated proficiency in conducting PCM and TEM analysis of airborne samples using NIOSH 84-100 Method 7400 PCM and NIOSH 84-100 Method 7402 (TEM confirmation of asbestos content of PCM results) from the same filter.

- i. Disposal Facility, Transporter: The Contractor shall provide written evidence that the landfill to be used is approved for asbestos disposal by the [USEPA] [and] [state] [and] [local] regulatory agencies. Copies of signed agreements between the Contractor (including subcontractors and transporters) and the asbestos waste disposal facility to accept and dispose of all asbestos containing waste generated during the performance of this contract shall be provided. Qualifications shall be provided for each subcontractor or transporter to be used, indicating previous experience in transport and disposal of asbestos waste to include all required state and local waste hauler requirements for asbestos. The Contractor and transporters shall meet the DOT requirements of 49 CFR 171, 49 CFR 172, and 49 CFR 173 as well as registration requirements of 49 CFR 107 and other applicable state or local requirements. The disposal facility shall meet the requirements of 40 CFR 61, Sections .154 or .155, as required in 40 CFR 61, Section .150(b), and other applicable state or local requirements.

1.5.3 Federal, State or Local Citations on Previous Projects

The Contractor and all subcontractors shall submit a statement, signed by an officer of the company, containing a record of any citations issued by Federal, State or local regulatory agencies relating to asbestos activities (including projects, dates, and resolutions); a list of penalties incurred through non-compliance with asbestos project specifications, including liquidated damages, overruns in scheduled time limitations and resolutions; and situations in which an asbestos-related contract has been terminated (including projects, dates, and reasons for terminations). If there are none, a negative declaration signed by an officer of the company shall be provided.

1.6 REGULATORY REQUIREMENTS

In addition to detailed requirements of this specification, work performed under this contract shall comply with EM 385-1-1, applicable federal, state, and local laws, ordinances, criteria, rules and regulations regarding handling, storing, transporting, and disposing of asbestos waste materials. This includes, but is not limited to, OSHA standards, 29 CFR 1926, especially Section .1101, 40 CFR 61, Subpart M and 40 CFR 763. Matters of interpretation of standards shall be submitted to the appropriate administrative agency for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements shall apply. The following state and local laws, rules and regulations regarding demolition, removal, encapsulation, construction alteration, repair, maintenance, renovation, spill/emergency cleanup, housekeeping, handling, storing, transporting and disposing of asbestos material apply: [_____].

1.7 SAFETY AND HEALTH PROGRAM AND PLANS

The Contractor shall develop and submit a written comprehensive site-specific Accident Prevention Plan at least 15 days prior to the preconstruction conference. The Accident Prevention Plan shall address requirements of EM 385-1-1, Appendix A, covering onsite work to be performed by the Contractor and subcontractors. The Accident Prevention Plan shall incorporate an Asbestos Hazard Abatement Plan, and Activity Hazard Analyses as separate appendices into 1 site specific Accident Prevention Plan document. Any portions of the Contractor's overall Safety and Health Program that are referenced in the Accident Prevention Plan, e.g., respirator program, hazard communication program, confined space entry program, etc., shall be included as appendices to the Accident Prevention Plan. The plan shall take into consideration all the individual asbestos abatement work tasks identified in Table 1. The plan shall be prepared, signed (and sealed, including certification number if required), and dated by the Contractor's Designated IH, Competent Person, and Project Supervisor.

1.7.1 Asbestos Hazard Abatement Plan Appendix

The Asbestos Hazard Abatement Plan appendix to the Accident Prevention Plan shall include, but not be limited to, the following:

- a. The personal protective equipment to be used;
- b. The location and description of regulated areas including clean and dirty areas, access tunnels, and decontamination unit (clean room, shower room, equipment room, storage areas such as load-out

unit);

- c. Initial exposure assessment in accordance with 29 CFR 1926, Section .1101;
- d. Level of supervision;
- e. Method of notification of other employers at the worksite;
- f. Abatement method to include containment and control procedures;
- g. Interface of trades involved in the construction;
- h. Sequencing of asbestos related work;
- i. Storage and disposal procedures and plan;
- j. Type of wetting agent and asbestos encapsulant to be used;
- k. Location of local exhaust equipment;
- l. Air monitoring methods (personal, environmental and clearance);
- m. Bulk sampling and analytical methods (if required);
- n. A detailed description of the method to be employed in order to control the spread of ACM wastes and airborne fiber concentrations;
- o. Fire and medical emergency response procedures;
- p. The security procedures to be used for all regulated areas.

1.7.2 Activity Hazard Analyses Appendix

Activity Hazard Analyses, for each major phase of work, shall be submitted and updated during the project. The Activity Hazard Analyses format shall be in accordance with EM 385-1-1 (Figure 1-1). The analysis shall define the activities to be performed for a major phase of work, identify the sequence of work, the specific hazards anticipated, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level. Work shall not proceed on that phase until the Activity Hazard Analyses has been accepted and a preparatory meeting has been conducted by the Contractor to discuss its contents with everyone engaged in the activities, including the onsite Government representatives. The Activity Hazard Analyses shall be continuously reviewed and, when appropriate, modified to address changing site conditions or operations.

1.8 PRECONSTRUCTION CONFERENCE AND ONSITE SAFETY

The Contractor and the Contractor's Designated Competent Person, Project Supervisor, and Designated IH shall meet with the Contracting Officer prior to beginning work at a safety preconstruction conference to discuss the details of the Contractor's submitted Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses appendices. Deficiencies in the Accident Prevention Plan will be discussed and the Accident Prevention Plan shall be revised to correct the deficiencies and resubmitted for acceptance. Any changes required in the specification as a result of the Accident Prevention Plan shall be identified specifically in the plan to allow for free discussion and acceptance by the Contracting

Officer, prior to the start of work. Onsite work shall not begin until the Accident Prevention Plan has been accepted. A copy of the written Accident Prevention Plan shall be maintained onsite. Changes and modifications to the accepted Accident Prevention Plan shall be made with the knowledge and concurrence of the Designated IH, the Project Supervisor, Designated Competent Person, and the Contracting Officer. Should any unforeseen hazard become evident during the performance of the work, the Designated IH shall bring such hazard to the attention of the Project Supervisor, Designated Competent Person, and the Contracting Officer, both verbally and in writing, for resolution as soon as possible. In the interim, all necessary action shall be taken by the Contractor to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Once accepted by the Contracting Officer, the Accident Prevention Plan, including the Asbestos Hazard Abatement Plan and Activity Hazard Analyses will be enforced as if an addition to the contract. Disregarding the provisions of this contract or the accepted Accident Prevention Plan will be cause for stopping of work, at the discretion of the Contracting Officer, until the matter has been rectified. [_____].

1.9 SECURITY

[Twenty-four hour security guard] [Fenced and locked security area] [_____] shall be provided for each regulated area. A log book shall be kept documenting entry into and out of the regulated area. Entry into regulated areas shall only be by personnel authorized by the Contractor and the Contracting Officer. Personnel authorized to enter regulated areas shall be trained, be medically evaluated, and wear the required personal protective equipment for the specific regulated area to be entered.

1.10 MEDICAL REQUIREMENTS

Medical requirements shall conform to 29 CFR 1926, Section .1101.

1.10.1 Medical Examinations

Before being exposed to airborne asbestos fibers, workers shall be provided with a medical examination as required by 29 CFR 1926, Section .1101 and other pertinent state or local requirements. This requirement shall have been satisfied within the last 12 months. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. X-ray films of asbestos workers shall be identified to the consulting radiologist and medical record jackets shall be marked with the word "asbestos."

1.10.1.1 Information Provided to the Physician

The Contractor shall provide the following information in writing to the examining physician:

- a. A copy of 29 CFR 1926, Section .1101 and Appendices D, E, G, and I;
- b. A description of the affected employee's duties as they relate to the employee's exposure;
- c. The employee's representative exposure level or anticipated exposure level;

- d. A description of any personal protective and respiratory equipment used or to be used;
- e. Information from previous medical examinations of the affected employee that is not otherwise available to the examining physician.

1.10.1.2 Written Medical Opinion

For each worker, a written medical opinion prepared and signed by a licensed physician indicating the following:

- a. Summary of the results of the examination.
- b. The potential for an existing physiological condition that would place the employee at an increased risk of health impairment from exposure to asbestos.
- c. The ability of the individual to wear personal protective equipment, including respirators, while performing strenuous work tasks under cold and/or heat stress conditions.
- d. A statement that the employee has been informed of the results of the examination, provided with a copy of the results, informed of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure, and informed of any medical condition that may result from asbestos exposure.

1.10.2 Medical and Exposure Records

Complete and accurate records shall be maintained of each employee's medical examinations, medical records, and exposure data, as required by 29 CFR 1910, Section .1910.20 and 29 CFR 1926, Section .1101 for a period of 30 years after termination of employment. Records of the required medical examinations and exposure data shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health (OSHA) or authorized representatives of the employee and an employee's physician upon request of the employee or former employee. A copy of the required medical certification for each employee shall be maintained on file at the worksite for review, as requested by the Contracting Officer or the representatives.

1.11 TRAINING PROGRAM

1.11.1 General Training Requirements

The Contractor shall establish a training program as specified by EPA Model Accreditation Plan (MAP), training requirements at 40 CFR 763, Subpart E, Appendix C, the State of Virginia regulation no. 18 VAC 15-20, OSHA requirements at 29 CFR 1926, Section .1101(k)(9), and this specification. Contractor employees shall complete the required training for the type of work they are to perform and such training shall be documented and provided to the Contracting Officer as specified in paragraph QUALIFICATIONS.

1.11.2 Project Specific Training

Prior to commencement of work, each worker shall be instructed by the Contractor's Designated IH and Competent Person in the following project specific training:

- a. The hazards and health effects of the specific types of ACM to be abated;
- b. The content and requirements of the Contractor's Accident Prevention Plan to include the Asbestos Hazard Abatement Plan and Activity Hazard Analyses and site-specific safety and health precautions;
- c. Hazard Communication Program;
- d. Hands-on training for each asbestos abatement technique to be employed;
- e. Heat and/or cold stress monitoring specific to this project;
- f. Air monitoring program and procedures;
- g. Medical surveillance to include medical and exposure record-keeping procedures;
- h. The association of cigarette smoke and asbestos-related disease;
- i. Security procedures;
- j. Specific work practice controls and engineering controls required for each Class of work in accordance with 29 CFR 1926, Section .1101.

1.12 RESPIRATORY PROTECTION PROGRAM

The Contractor's Designated IH shall establish in writing, and implement a respiratory protection program in accordance with 29 CFR 1926, Section .1101, 29 CFR 1910, Section .134, ANSI Z88.2, CGA G-7, CGA G-7.1 and DETAIL SHEET 12. The Contractor's Designated IH shall establish minimum respiratory protection requirements based on measured or anticipated levels of airborne asbestos fiber concentrations encountered during the performance of the asbestos abatement work. The Contractor's respiratory protection program shall include, but not be limited to, the following elements:

- a. The company policy, used for the assignment of individual responsibility, accountability, and implementation of the respiratory protection program.
- b. The standard operating procedures covering the selection and use of respirators. Respiratory selection shall be determined by the hazard to which the worker is exposed.
- c. Medical evaluation of each user to verify that the worker may be assigned to an activity where respiratory protection is required.
- d. Training in the proper use and limitations of respirators.
- e. Respirator fit-testing, i.e., quantitative, qualitative and individual functional fit checks.
- f. Regular cleaning and disinfection of respirators.

- g. Routine inspection of respirators during cleaning and after each use when designated for emergency use.
- h. Storage of respirators in convenient, clean, and sanitary locations.
- i. Surveillance of regulated area conditions and degree of employee exposure (e.g., through air monitoring).
- j. Regular evaluation of the continued effectiveness of the respiratory protection program.
- k. Recognition and procedures for the resolution of special problems as they affect respirator use (e.g., no facial hair that comes between the respirator face piece and face or interferes with valve function; prescription eye wear usage; contact lenses usage; etc.).
- l. Proper training in putting on and removing respirators.

1.12.1 Respiratory Fit Testing

A qualitative or quantitative fit test conforming to 29 CFR 1926, Section 1101, Appendix C shall be conducted by the Contractor's Designated IH for each Contractor worker required to wear a respirator, and for the Contracting Officer and authorized visitors who enter a regulated area where respirators are required to be worn. A respirator fit test shall be performed for each worker wearing a negative-pressure respirator prior to initially wearing a respirator on this project and every 6 months thereafter. The qualitative fit tests may be used only for testing the fit of half-mask respirators where they are permitted to be worn, or of full-facepiece air purifying respirators where they are worn at levels at which half-facepiece air purifying respirators are permitted. If physical changes develop that will affect the fit, a new fit test for the worker shall be performed. Functional fit checks shall be performed by employees each time a respirator is put on and in accordance with the manufacturer's recommendation.

1.12.2 Respirator Selection and Use Requirements

The Contractor shall provide respirators, and ensure that they are used as required by 29 CFR 1926, Section .1101 and in accordance with the manufacturer's recommendations. Respirators shall be jointly approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health (MSHA/NIOSH), or by NIOSH, under the provisions of 42 CFR 84, for use in environments containing airborne asbestos fibers. Personnel who handle ACM, enter regulated areas that require the wearing of a respirator, or who are otherwise carrying out abatement activities that require the wearing of a respirator, shall be provided with approved respirators that are fully protective of the worker at the measured or anticipated airborne asbestos concentration level to be encountered. For air-purifying respirators, the particulate filter portion of the cartridges or canister approved for use in airborne asbestos environments shall be high-efficiency particulate air (HEPA). The initial respirator selection and the decisions regarding the upgrading or downgrading of respirator type shall be made by the Contractor's Designated IH based on the measured or anticipated airborne asbestos fiber concentrations to be encountered. Recommendations made by the Contractor's Designated IH to downgrade respirator type shall be submitted in writing to

the Contracting Officer. The Contractor's Designated Competent Person in consultation with the Designated IH, shall have the authority to take immediate action to upgrade or downgrade respiratory type when there is an immediate danger to the health and safety of the wearer. Respirators shall be used in the following circumstances:

- a. During all Class I asbestos jobs.
- b. During all Class II work where the ACM is not removed in a substantially intact state.
- c. During all Class II and III work which is not performed using wet methods. Respirators need not be worn during removal of ACM from sloped roofs when a negative exposure assessment has been made and ACM is removed in an intact state.
- d. During all Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment.
- e. During all Class III jobs where TSI or surfacing ACM is being disturbed.
- f. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
- g. During all work where employees are exposed above the PEL-TWA or PEL-Excursion Limit.
- h. In emergencies

1.12.3 Class I Work

The Contractor shall provide: (1) a tight-fitting, powered air purifying respirator equipped with high efficiency filters, or (2) a full-facepiece supplied air respirator operated in the pressure demand mode, equipped with HEPA egress cartridges, or (3) an auxiliary positive pressure self-contained breathing apparatus, for all employees within the regulated area where Class I work is being performed; provided that a negative exposure assessment has not been produced, and that the exposure level will not exceed 1 f/cc as an 8-hour time weighted average. A full-facepiece supplied air respirator, operated in the pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus shall be provided under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour time weighted average.

1.12.4 Class II and III Work

The Contractor shall provide an air purifying respirator, other than a disposable respirator, equipped with high-efficiency filters whenever the employee performs Class II and III asbestos jobs where the Contractor does not produce a negative exposure assessment ; and Class III jobs where TSI or surfacing ACM is being disturbed.

1.12.5 Sanitation

Employees who wear respirators shall be permitted to leave work areas to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.

1.13 HAZARD COMMUNICATION PROGRAM

A hazard communication program shall be established and implemented in accordance with 29 CFR 1926, Section .59. Material safety data sheets (MSDSs) shall be provided for all hazardous materials brought onto the worksite. One copy shall be provided to the Contracting Officer and 1 copy shall be included in the Contractor's Hazard Communication Program.

1.14 LICENSES, PERMITS AND NOTIFICATIONS

1.14.1 General Legal Requirements

Necessary licenses, permits and notifications shall be obtained in conjunction with the project's asbestos abatement, transportation and disposal actions and timely notification furnished of such actions as required by federal, state, regional, and local authorities. The Contractor shall notify the Regional Office of the USEPA, state's environmental protection agency responsible for asbestos air emissions, state OSHA program, and the Contracting Officer in writing, at least 20 days prior to the commencement of work, in accordance with 40 CFR 61, Subpart M, and state and local requirements to include the mandatory "Notification of Demolition and Renovation Record" form and other required notification documents. Notification shall be by Certified Mail, Return Receipt Requested. The Contractor shall furnish copies of the receipts to the Contracting Officer, in writing, prior to the commencement of work. Local fire department shall be notified 3 days before fire-proofing material is removed from a building and the notice shall specify whether or not the material contains asbestos. A copy of the rental company's written acknowledgment and agreement shall be provided as required by paragraph RENTAL EQUIPMENT. For licenses, permits, and notifications that the Contractor is responsible for obtaining, the Contractor shall pay any associated fees or other costs incurred.

1.14.2 Litigation and Notification

The Contractor shall notify the Contracting Officer if any of the following occur:

- a. The Contractor or any of the subcontractors are served with notice of violation of any law, regulation, permit or license which relates to this contract;
- b. Proceedings are commenced which could lead to revocation of related permits or licenses; permits, licenses or other Government authorizations relating to this contract are revoked;
- c. Litigation is commenced which would affect this contract;
- d. The Contractor or any of the subcontractors become aware that their equipment or facilities are not in compliance or may fail to comply in the future with applicable laws or regulations.

1.15 PERSONAL PROTECTIVE EQUIPMENT

Three complete sets of personal protective equipment shall be made available to the Contracting Officer and authorized visitors for entry to the regulated area. Contracting Officer and authorized visitors shall be provided with training equivalent to that provided to Contractor

employees in the selection, fitting, and use of the required personal protective equipment and the site safety and health requirements. Contractor workers shall be provided with personal protective clothing and equipment and the Contractor shall ensure that it is worn properly. The Contractor's Designated IH and Designated Competent Person shall select and approve all the required personal protective clothing and equipment to be used.

1.15.1 Respirators

Respirators shall be in accordance with paragraph RESPIRATORY PROTECTION PROGRAM.

1.15.2 Whole Body Protection

Personnel exposed to airborne concentrations of asbestos that exceed the PELs, or for all OSHA Classes of work for which a required negative exposure assessment is not produced, shall be provided with whole body protection and such protection shall be worn properly. The Contractor's Designated IH and Competent Person shall select and approve the whole body protection to be used. The Competent Person shall examine work suits worn by employees at least once per work shift for rips or tears that may occur during performance of work. When rips or tears are detected while an employee is working, rips and tears shall be immediately mended, or the work suit shall be immediately replaced. Disposable whole body protection shall be disposed of as asbestos contaminated waste upon exiting from the regulated area. Reusable whole body protection worn shall be either disposed of as asbestos contaminated waste upon exiting from the regulated area or be properly laundered in accordance with 29 CFR 1926, Section .1101. Whole body protection used for asbestos abatement shall not be removed from the worksite by a worker to be cleaned. Recommendations made by the Contractor's Designated IH to downgrade whole body protection shall be submitted in writing to the Contracting Officer. The Contractor's Designated Competent Person, in consultation with the Designated IH, has the authority to take immediate action to upgrade or downgrade whole body protection when there is an immediate danger to the health and safety of the wearer.

1.15.2.1 Coveralls

[Disposable-impermeable] [Disposable-breathable] [Reusable] coveralls with a zipper front shall be provided. Sleeves shall be secured at the wrists, and foot coverings secured at the ankles. See DETAIL SHEET 13.

1.15.2.2 Underwear

Disposable underwear shall be provided. If reusable underwear are used, they shall be disposed of as asbestos contaminated waste or laundered in accordance with 29 CFR 1926, Section .1101. Asbestos abatement workers shall not remove contaminated reusable underwear worn during abatement of ACM from the site to be laundered.

1.15.2.3 Work Clothing

An additional coverall shall be provided when the abatement and control method employed does not provide for the exit from the regulated area directly into an attached decontamination unit. Cloth work clothes for wear under the protective coverall, and foot coverings, shall be provided when work is being conducted in low temperature conditions. Cloth work

clothes shall be either disposed of as asbestos contaminated waste or properly laundered in accordance with 29 CFR 1926, Section .1101.

1.15.2.4 Gloves

Gloves shall be provided to protect the hands. Where there is the potential for hand injuries (i.e., scrapes, punctures, cuts, etc.) a suitable glove shall be provided and used.

1.15.2.5 Foot Coverings

Cloth socks shall be provided and worn next to the skin. Footwear, as required by OSHA and EM 385-1-1, that is appropriate for safety and health hazards in the area shall be worn. Rubber boots shall be used in moist or wet areas. Reusable footwear removed from the regulated area shall be thoroughly decontaminated or disposed of as ACM waste. Disposable protective foot covering shall be disposed of as ACM waste. If rubber boots are not used, disposable foot covering shall be provided.

1.15.2.6 Head Covering

Hood type [disposable] [reusable] head covering shall be provided. In addition, protective head gear (hard hats) shall be provided as required. Hard hats shall only be removed from the regulated area after being thoroughly decontaminated.

1.15.2.7 Protective Eye Wear

Eye protection provided shall be in accordance with ANSI Z87.1.

1.16 HYGIENE FACILITIES AND PRACTICES

The Contractor shall establish a decontamination area for the decontamination of employees, material and equipment. The Contractor shall ensure that employees enter and exit the regulated area through the decontamination area.

1.16.1 Shower Facilities

Shower facilities, when provided, shall comply with 29 CFR 1910, Section .141(d)(3).

1.16.2 3-Stage Decontamination Area

[A temporary negative pressure decontamination unit that is adjacent and attached in a leak-tight manner to the regulated area shall be provided as described in SET-UP DETAIL SHEET Numbers 22 and 23.] [Utilization of prefabricated units shall have prior approval of the Contracting Officer.] The decontamination unit shall have an equipment room and a clean room separated by a shower that complies with 29 CFR 1910, Section .141 (unless the Contractor can demonstrate that such facilities are not feasible). Equipment and surfaces of containers filled with ACM shall be cleaned prior to removing them from the equipment room or area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste. Two separate lockers shall be provided for each asbestos worker, one in the equipment room and one in the clean room. [Hot water service may be secured from the building hot water system provided backflow protection is installed by the Contractor at the point of connection.] [Should sufficient

hot water be unavailable, the Contractor shall provide a minimum 40 gal. electric water heater with minimum recovery rate of 20 gal. per hour and a temperature controller for each showerhead.] The Contractor shall provide a minimum of [2] [_____] showers. Instantaneous type in-line water heater may be incorporated at each shower head in lieu of hot water heater, upon approval by the Contracting Officer. Flow and temperature controls shall be located within the shower and shall be adjustable by the user. The wastewater pump shall be sized for 1.25 times the showerhead flow-rate at a pressure head sufficient to satisfy the filter head loss and discharge line losses. The pump shall supply a minimum 25 gpm flow with 35 ft. of pressure head. Used shower water shall be collected and filtered to remove asbestos contamination. Filters and residue shall be disposed of as asbestos contaminated material, per DETAIL SHEETS 9 and 14. Filtered water shall be discharged to the sanitary system. Wastewater filters shall be installed in series with the first stage pore size of 20 microns and the second stage pore size of 5 microns. The floor of the decontamination unit's clean room shall be kept dry and clean at all times. Water from the shower shall not be allowed to wet the floor in the clean room. Surfaces of the clean room and shower shall be wet-wiped 2 times after each shift change with a disinfectant solution. Proper housekeeping and hygiene requirements shall be maintained. Soap and towels shall be provided for showering, washing and drying. Any cloth towels provided shall be disposed of as ACM waste or shall be laundered in accordance with 29 CFR 1926, Section .1101.

1.16.3 Load-Out Unit

A temporary load-out unit that is adjacent and connected to the regulated area and [access tunnel] shall be provided as described in DETAIL SHEET Number [20] [and] [25]. Utilization of prefabricated units shall have prior approval of the Contracting Officer. The load-out unit shall be attached in a leak-tight manner to each regulated area. Surfaces of the load-out unit and access tunnel shall be adequately wet-wiped 2 times after each shift change. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.4 Single Stage Decontamination Area

A decontamination area (equipment room/area) shall be provided for Class I work involving less than 25 feet or 10 square feet of TSI or surfacing ACM, and for Class II and Class III asbestos work operations where exposures exceed the PELs or where there is no negative exposure assessment produced before the operation. The equipment room or area shall be adjacent to the regulated area for the decontamination of employees, material, and their equipment which is contaminated with asbestos. The equipment room or area shall consist of an area covered by an impermeable drop cloth on the floor or horizontal working surface. The area must be of sufficient size to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area. Surfaces of the equipment room shall be wet wiped 2 times after each shift. Materials used for wet wiping shall be disposed of as asbestos contaminated waste.

1.16.5 Decontamination Requirements for Class IV Work

The Contractor shall ensure that employees performing Class IV work within a regulated area comply with the hygiene practice required of employees performing work which has a higher classification within that regulated area, or the Contractor shall provide alternate decontamination area

facilities for employees cleaning up debris and material which is TSI or surfacing ACM.

1.16.6 Decontamination Area Entry Procedures

The Contractor shall ensure that employees entering the decontamination area through the clean room or clean area:

- a. Remove street clothing in the clean room or clean area and deposit it in lockers.
- b. Put on protective clothing and respiratory protection before leaving the clean room or clean area.
- c. Pass through the equipment room to enter the regulated area.

1.16.7 Decontamination Area Exit Procedures

The Contractor shall ensure that the following procedures are followed:

- a. Before leaving the regulated area, respirators shall be worn while employees remove all gross contamination and debris from their work clothing using a HEPA vacuum.
- b. Employees shall remove their protective clothing in the equipment room and deposit the clothing in labeled impermeable bags or containers (see Detail Sheets 9 and 14) for disposal and/or laundering.
- c. Employees shall not remove their respirators in the equipment room.
- d. Employees shall shower prior to entering the clean room. If a shower has not been located between the equipment room and the clean room or the work is performed outdoors, the Contractor shall ensure that employees engaged in Class I asbestos jobs: a) Remove asbestos contamination from their work suits in the equipment room or decontamination area using a HEPA vacuum before proceeding to a shower that is not adjacent to the work area; or b) Remove their contaminated work suits in the equipment room, without cleaning worksuits, and proceed to a shower that is not adjacent to the work area.
- e. After showering, employees shall enter the clean room before changing into street clothes.

1.16.8 Lunch Areas

The Contractor shall provide lunch areas in which the airborne concentrations of asbestos are below 0.01 f/cc.

1.16.9 Smoking

Smoking, if allowed by the Contractor, shall only be permitted in designated areas approved by the Contracting Officer.

1.17 REGULATED AREAS

All Class I, II, and III asbestos work shall be conducted within regulated areas. The regulated area shall be demarcated to minimize the number of

persons within the area and to protect persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they shall demarcate the regulated area. Access to regulated areas shall be limited to authorized persons. The Contractor shall control access to regulated areas, ensure that only authorized personnel enter, and verify that Contractor required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.

1.18 WARNING SIGNS AND TAPE

Warning signs and tape printed [bilingually] [in English] [and] [_____] [in pictographs and graphics] shall be provided at the regulated boundaries and entrances to regulated areas. The Contractor shall ensure that all personnel working in areas contiguous to regulated areas comprehend the warning signs. Signs shall be located to allow personnel to read the signs and take the necessary protective steps required before entering the area. Warning signs, as shown and described in DETAIL SHEET 11, shall be in vertical format conforming to 29 CFR 1910 and 29 CFR 1926, Section .1101, a minimum of 20 by 14 inches, and displaying the following legend in the lower panel:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
[RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA]

Spacing between lines shall be at least equal to the height of the upper of any two lines. Warning tape shall be provided as shown and described on DETAIL SHEET 11. Decontamination unit signage shall be as shown and described on DETAIL SHEET 15.

1.19 WARNING LABELS

Warning labels shall be affixed to all asbestos disposal containers used to contain asbestos materials, scrap, waste debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to requirements are acceptable. Warning labels shall be as described in DETAIL SHEET 14, shall conform to 29 CFR 1926, Section .1101 and shall be of sufficient size to be clearly legible displaying the following legend:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

1.20 LOCAL EXHAUST VENTILATION

Local exhaust ventilation units shall conform to ANSI Z9.2 and 29 CFR 1926, Section .1101. Filters on local exhaust system equipment shall conform to ANSI Z9.2 and UL 586. Filter shall be UL labeled.

1.21 TOOLS

Vacuums shall be leak proof to the filter, equipped with HEPA filters, of sufficient capacity and necessary capture velocity at the nozzle or nozzle attachment to efficiently collect, transport and retain the ACM waste

material. Power tools shall not be used to remove ACM unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation capture and collection system, or has otherwise been approved for use by the Contracting Officer. Residual asbestos shall be removed from reusable tools prior to storage and reuse. Reusable tools shall be thoroughly decontaminated prior to being removed from regulated areas.

1.22 RENTAL EQUIPMENT

If rental equipment is to be used, written notification shall be provided to the rental agency, concerning the intended use of the equipment, the possibility of asbestos contamination of the equipment and the steps that will be taken to decontaminate such equipment. A written acceptance of the terms of the Contractor's notification shall be obtained from the rental agency.

1.23 AIR MONITORING EQUIPMENT

The Contractor's Designated IH shall approve air monitoring equipment to be used to collect samples. The equipment shall include, but shall not be limited to:

- a. High-volume sampling pumps that can be calibrated and operated at a constant airflow up to 16 liters per minute when equipped with a sampling train of tubing and filter cassette.
- b. Low-volume, battery powered, body-attachable, portable personal pumps that can be calibrated to a constant airflow up to approximately 3.5 liters per minute when equipped with a sampling train of tubing and filter cassette, and a self-contained rechargeable power pack capable of sustaining the calibrated flow rate for a minimum of 10 hours. The pumps shall also be equipped with an automatic flow control unit which shall maintain a constant flow, even as filter resistance increases due to accumulation of fiber and debris on the filter surface.
- c. Single use standard 25 mm diameter cassette, open face, 0.8 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive extension cowl, and shrink bands, to be used with low flow pumps in accordance with 29 CFR 1926, Section .1101 for personal air sampling.
- d. Single use standard 25 mm diameter cassette, open face, 0.45 micron pore size, mixed cellulose ester membrane filters and cassettes with 50 mm electrically conductive cowl, and shrink bands, to be used with high flow pumps when conducting environmental area sampling using NIOSH 84-100 Methods 7400 and 7402, (and the transmission electric microscopy method specified at 40 CFR 763 if required).
- e. Appropriate plastic tubing to connect the air sampling pump to the selected filter cassette.
- f. A flow calibrator capable of calibration to within plus or minus 2 percent of reading over a temperature range of minus 4 to plus 140 degrees F and traceable to a NIST primary standard.

1.24 EXPENDABLE SUPPLIES

1.24.1 Glovebag

Glovebags shall be provided as described in 29 CFR 1926, Section .1101 and SET-UP DETAIL SHEET 10. The glovebag assembly shall be 6 mil thick plastic, prefabricated and seamless at the bottom with preprinted OSHA warning label.

1.24.2 Duct Tape

Industrial grade duct tape of appropriate widths suitable for bonding sheet plastic and disposal container shall be provided.

1.24.3 Disposal Containers

Leak-tight (defined as solids, liquids, or dust that cannot escape or spill out) disposal containers shall be provided for ACM wastes as required by 29 CFR 1926 Section .1101 and DETAIL SHEETS 9A, 9B, 9C and 14.

1.24.4 Disposal Bags

Leak-tight bags, 6 mil thick, shall be provided for placement of asbestos generated waste as described in DETAIL SHEET 9A.

1.24.5 Fiberboard Drums

Fiberboard drums shall be [_____].

1.24.6 Cardboard Boxes

Heavy-duty corrugated cardboard boxes, coated with plastic or wax to retard deterioration from moisture, shall be provided as described in DETAIL SHEET 9C, if required by state and local requirements. Boxes shall fit into selected ACM disposal bags. Filled boxes shall be sealed leak-tight with duct tape.

1.24.7 Sheet Plastic

Sheet plastic shall be polyethylene of 6 mil minimum thickness and shall be provided in the largest sheet size necessary to minimize seams, as indicated on the project drawings. Film shall be [clear] [frosted] [or] [black] and conform to ASTM D 4397, except as specified below:

1.24.7.1 Flame Resistant

Where a potential for fire exists, flame-resistant sheets shall be provided. Film shall be [frosted] [or] [black] and shall conform to the requirements of NFPA 701.

1.24.7.2 Reinforced

Reinforced sheets shall be provided where high skin strength is required, such as where it constitutes the only barrier between the regulated area and the outdoor environment. The sheet stock shall consist of translucent, nylon-reinforced or woven-polyethylene thread laminated between 2 layers of polyethylene film. Film shall meet flame resistant standards of NFPA 701.

1.24.8 Amended Water

Amended water shall meet the requirements of ASTM D 1331.

1.24.9 Mastic Removing Solvent

Mastic removing solvent shall be nonflammable and shall not contain methylene chloride, glycol ether, or halogenated hydrocarbons. Solvents used onsite shall have a flash point greater than 140 degrees F.

1.24.10 Leak-tight Wrapping

Two layers of 6 mil minimum thick polyethylene sheet stock shall be used for the containment of removed asbestos-containing components or materials such as reactor vessels, large tanks, boilers, insulated pipe segments and other materials too large to be placed in disposal bags as described in DETAIL SHEET 9B. Upon placement of the ACM component or material, each layer shall be individually leak-tight sealed with duct tape.

1.24.11 Viewing Inspection Window

Where feasible, a minimum of 1 clear, 1/8 inch thick, acrylic sheet, 18 by 24 inches, shall be installed as a viewing inspection window at eye level on a wall in each containment enclosure. The windows shall be sealed leak-tight with industrial grade duct tape.

1.24.12 Wetting Agents

Removal encapsulant (a penetrating encapsulant) shall be provided when conducting removal abatement activities that require a longer removal time or are subject to rapid evaporation of amended water. The removal encapsulant shall be capable of wetting the ACM and retarding fiber release during disturbance of the ACM greater than or equal to that provided by amended water. Performance requirements for penetrating encapsulants are specified in paragraph ENCAPSULANTS.

1.24.13 Strippable Coating

Strippable coating in aerosol cans shall be used to adhere to surfaces and to be removed cleanly by stripping, at the completion of work. This work shall only be done in well ventilated areas.

1.25 MISCELLANEOUS ITEMS

A sufficient quantity of other items, such as, but not limited to: scrapers, brushes, brooms, staple guns, tarpaulins, shovels, rubber squeegees, dust pans, other tools, scaffolding, staging, enclosed chutes, wooden ladders, lumber necessary for the construction of containments, UL approved temporary electrical equipment, material and cords, ground fault circuit interrupters, water hoses of sufficient length, fire extinguishers, first aid kits, portable toilets, logbooks, log forms, markers with indelible ink, spray paint in bright color to mark areas, project boundary fencing, etc., shall be provided.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants shall conform to USEPA requirements, shall contain no toxic or hazardous substances and no solvent and shall meet the following requirements:

ALL ENCAPSULANTS

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	Univ. of Pittsburgh Protocol
Life Expectancy, 20 yrs Accelerated Aging Test	ASTM C 732
Permeability, Minimum 0.4 perms	ASTM E 96

Additional Requirements for Bridging Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 50 pounds of force/foot	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Minimum 43 in-lb (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Penetrating Encapsulant

Requirement	Test Standard
Cohesion/Adhesion Test, 50 pounds of force/foot	ASTM E 736
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test(Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance, Minimum 43 in-lb (Gardner Impact Test)	ASTM D 2794
Flexibility, no rupture or cracking (Mandrel Bend Test)	ASTM D 522

Additional Requirements for Lockdown Encapsulant

Requirement	Test Standard
Fire Resistance, Negligible affect on fire resistance rating over 3 hour test(Tested with fireproofing over encapsulant applied directly to steel member)	ASTM E 119
Bond Strength, 100 pounds of force/foot (Tests compatibility with cementitious and fibrous fireproofing)	ASTM E 736

ALL ENCAPSULANTS

Requirement

Test Standard

2.2 ENCASEMENT PRODUCTS

Encasement shall consist of primary cellular polymer coat, polymer finish coat, and any other finish coat as approved by the Contracting Officer.

2.3 RECYCLABLE MATERIALS

The Contractor shall comply with EPA requirements in accordance with Section 01670 RECYCLED / RECOVERED MATERIALS.

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

Asbestos abatement work tasks shall be performed as shown on the detailed plans and drawings, as summarized in paragraph DESCRIPTION OF WORK and including Table 1 and the Contractor's Accident Prevention Plan, Asbestos Hazard Abatement Plan, and the Activity Hazard Analyses. The Contractor shall use the engineering controls and work practices required in 29 CFR 1926, Section .1101(g) in all operations regardless of the levels of exposure. Personnel shall wear and utilize protective clothing and equipment as specified. The Contractor shall not permit eating, smoking, drinking, chewing or applying cosmetics in the regulated area. All hot work (burning, cutting, welding, etc.) shall be conducted under controlled conditions in conformance with 29 CFR 1926, Section .352, Fire Prevention. Personnel of other trades, not engaged in asbestos abatement activities, shall not be exposed at any time to airborne concentrations of asbestos unless all the administrative and personal protective provisions of the Contractor's Accident Prevention Plan are complied with. Power to the regulated area shall be locked-out and tagged in accordance with 29 CFR 1910, and temporary electrical service with ground fault circuit interrupters shall be provided as needed. Temporary electrical service shall be disconnected when necessary for wet removal. The Contractor shall stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc, or the pre-abatement concentration, whichever is greater, outside the regulated area; or (2) equals or exceeds 1.0 f/cc inside the regulated area. The Contractor shall correct the condition to the satisfaction of the Contracting Officer, including visual inspection and air sampling. Work shall resume only upon notification by the Contracting Officer. Corrective actions shall be documented.

3.2 PROTECTION OF ADJACENT WORK OR AREAS TO REMAIN

Asbestos abatement shall be performed without damage to or contamination of adjacent work or area. Where such work or area is damaged or contaminated, as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government, as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work shall stop in all effected areas immediately and the spill shall be cleaned. When satisfactory visual inspection and air sampling analysis results are obtained and have been evaluated by the

Contractor's Designated IH and the Contracting Officer, work shall proceed.

3.3 OBJECTS

3.3.1 Removal of Mobile Objects

[Mobile objects, furniture, [_____] and equipment will be removed from the area of work by the Government before asbestos abatement work begins.] [DETAIL SHEET 27, contains a summary of Contractor's required handling, cleaning and storage and reinstallation of mobile objects, furniture and equipment located in each abatement area. Mobile objects and furnishings identified in DETAIL SHEET 27 [are] [are not] considered contaminated with asbestos fibers. Mobile objects and furnishings shall be precleaned using HEPA filtered vacuum followed by [wet wiping] [and] [or] [steam cleaning]. These objects shall be removed to an area or site designated on DETAIL SHEET 27 and as identified by the Contracting Officer, and stored; or other appropriate action taken as identified on DETAIL SHEET 27. Carpets, draperies, and other items which may not be suitable for onsite wet cleaning methods shall be [properly laundered in accordance with 29 CFR 1926, Section .1101] [disposed of as asbestos contaminated material].]

3.3.2 Stationary Objects

Stationary objects, furniture, [_____] and equipment as shown on DETAIL SHEET 27, shall remain in place [and shall be precleaned using HEPA vacuum followed by adequate wet wiping.] Stationary objects and furnishings shall be covered with 2 layers of polyethylene and edges sealed with duct tape.

3.3.3 Reinstallation of Mobile Objects

At the conclusion of the asbestos abatement work in each regulated area, and after meeting the final clearance requirements for each regulated area, objects previously removed shall be transferred back to the cleaned area from which they came in accordance with the storage code designation for that material as shown on DETAIL SHEET 27, and reinstalled.

3.4 BUILDING VENTILATION SYSTEM AND CRITICAL BARRIERS

Building ventilating systems supplying air into or returning air out of a regulated area shall be [shut down and isolated by lockable switch or other positive means in accordance with 29 CFR 1910, Section .147.] [isolated by airtight seals to prevent the spread of contamination throughout the system.] Air-tight critical barriers shall be installed on building ventilating openings located inside the regulated area that supply or return air from the building ventilation system or serve to exhaust air from the building. The critical barriers shall consist of [air-tight rigid covers for building ventilation supply and exhaust grills where the ventilation system is required to remain in service during abatement] [2 layers of polyethylene]. Edges to wall, ceiling and floor surfaces shall be sealed with industrial grade duct tape. Critical barriers shall be installed as shown on drawings and appended SET-UP DETAIL SHEETS.

3.5 PRECLEANING

[Surfaces shall be [cleaned by HEPA vacuum] [and] [adequately wet wiped] prior to establishment of containment.] [The following surfaces [_____] shall be [____].]

3.6 METHODS OF COMPLIANCE

3.6.1 Mandated Practices

The Contractor shall employ proper handling procedures in accordance with 29 CFR 1926 and 40 CFR 61, Subpart M, and the specified requirements. The specific abatement techniques and items identified shall be detailed in the Contractor's Asbestos Hazard Abatement Plan including, but not limited to, details of construction materials, equipment, and handling procedures. The Contractor shall use the following engineering controls and work practices in all operations, regardless of the levels of exposure:

- a. Vacuum cleaners equipped with HEPA filters to collect debris and dust containing ACM.
- b. Wet methods or wetting agents to control employee exposures during asbestos handling, mixing, removal, cutting, application, and cleanup; except where it can be demonstrated that the use of wet methods is unfeasible due to, for example, the creation of electrical hazards, equipment malfunction, and in roofing.
- c. Prompt clean-up and disposal in leak-tight containers of wastes and debris contaminated with asbestos.
- d. Inspection and repair of polyethylene in work and high traffic areas.
- e. Cleaning of equipment and surfaces of containers filled with ACM prior to removing them from the equipment room or area.

3.6.2 Control Methods

The Contractor shall use the following control methods to comply with the PELs:

- a. Local exhaust ventilation equipped with HEPA filter dust collection systems;
- b. Enclosure or isolation of processes producing asbestos dust;
- c. Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter;
- d. Use of other work practices and engineering controls;
- e. Where the feasible engineering and work practice controls described above are not sufficient to reduce employee exposure to or below the PELs, the Contractor shall use them to reduce employee exposure to the lowest levels attainable by these controls and shall supplement them by the use of respiratory protection that complies with paragraph, RESPIRATORY PROTECTION PROGRAM.

3.6.3 Unacceptable Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work which disturbs ACM, regardless of measured levels of asbestos exposure or the results of initial exposure assessments:

- a. High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- b. Compressed air used to remove asbestos, or materials containing asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust cloud created by the compressed air.
- c. Dry sweeping, shoveling, or other dry clean-up of dust and debris containing ACM.
- d. Employee rotation as a means of reducing employee exposure to asbestos.

3.6.4 Class I Work Procedures

In addition to requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the installation and operation of the control system.
- b. For jobs involving the removal of more than 25 feet or 10 square feet of TSI or surfacing material, the Contractor shall place critical barriers over all openings to the regulated area.
- c. HVAC systems shall be isolated in the regulated area by sealing with a double layer of plastic or air-tight rigid covers.
- d. Impermeable dropcloths (6 mil or greater thickness) shall be placed on surfaces beneath all removal activity.
- e. Objects within the regulated area shall be handled as specified in paragraph OBJECTS.
- f. Where a negative exposure assessment has not been provided or where exposure monitoring shows the PEL was exceeded, the regulated area shall be ventilated to move contaminated air away from the employee's breathing zone toward a HEPA unit or collection device.

3.6.5 Specific Control Methods for Class I Work

In addition to requirements of paragraph Class I Work Procedures, Class I asbestos work shall be performed using the control methods identified in the subparagraphs below.

3.6.5.1 Negative Pressure Enclosure (NPE) System

The NPE system shall be as shown in SETUP DETAIL SHEET [2] [3] [4] [8]. The system shall provide at least 4 air changes per hour inside the containment. The local exhaust unit equipment shall be operated 24 hours per day until the containment is removed, and shall be leak-proof to the filter and equipped with HEPA filters. Air movement shall be directed away from the employees and toward a HEPA filtration device. The NPE shall be smoke tested for leaks at the beginning of each shift. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential

of minus 0.02 inch of water column relative to adjacent, unsealed areas. Pressure differential shall be monitored continuously, 24 hours per day, with an automatic manometric recording instrument. Pressure differential recordings shall be provided daily on the same day collected. Readings shall be reviewed by the Contractor's Designated Competent Person and IH prior to submittal. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. The building ventilation system shall not be used as the local exhaust system for the regulated area. The local exhaust system shall terminate outdoors unless an alternate arrangement is allowed by the Contract Officer. All filters used shall be new at the beginning of the project and shall be periodically changed as necessary and disposed of as ACM waste.

3.6.5.2 Glovebag Systems

Glovebag systems shall be as shown in SETUP DETAIL SHEET 10. The glovebag system shall be used to remove ACM from straight runs of piping and elbows and other connections. Glovebags shall be used without modification and shall be smoke-tested for leaks and any leaks sealed prior to use. Glovebags shall be installed to completely cover the circumference of pipe or other structures where the work is to be done. Glovebags shall be used only once and shall not be moved. Glovebags shall not be used on surfaces that have temperatures exceeding 150 degrees F. Prior to disposal, glovebags shall be collapsed by removing air within them using a HEPA vacuum. Before beginning the operation, loose and friable material adjacent to the glovebag operation shall be wrapped and sealed in 2 layers of plastic or otherwise rendered intact. At least 2 persons shall perform Class I glovebag removal. Asbestos regulated work areas shall be established as specified and shown on detailed drawings and plans for glovebag abatement. Designated boundary limits for the asbestos work shall be established with rope or other continuous barriers and all other requirements for asbestos control areas shall be maintained, including area signage and boundary warning tape as specified in SET-UP DETAIL SHEET 11.

- a. In addition to requirements for negative pressure glovebag systems above, the Contractor shall attach HEPA vacuum systems or other devices to the bag to prevent collapse during removal of ACM from straight runs of piping and elbows and other connections.
- b. The negative pressure glove boxes used to remove ACM from pipe runs shall be fitted with gloved apertures and a bagging outlet and constructed with rigid sides from metal or other material which can withstand the weight of the ACM and water used during removal. A negative pressure shall be created in the system using a HEPA filtration system. The box shall be smoke tested for leaks prior to each use.

3.6.5.3 Mini-Enclosures

[Single bulkhead containment] [Double bulkhead containment] [or] [Mini-containment (small walk-in enclosure)] as shown in SETUP DETAIL SHEET [5] [6] [7] to accommodate no more than 2 persons, may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices. The mini-enclosure shall be inspected for leaks and smoke tested before each use. Air movement shall be directed away from the employee's breathing zone within the mini-enclosure.

3.6.5.4 Wrap and Cut Operation

Wrap and cut operations shall be as shown in SETUP DETAIL SHEET [9B] [10]. Prior to cutting pipe, the asbestos-containing insulation shall be wrapped with polyethylene and securely sealed with duct tape to prevent asbestos becoming airborne as a result of the cutting process. The following steps shall be taken: install glovebag, strip back sections to be cut 6 inches from point of cut, and cut pipe into manageable sections.

3.6.6 Class II Work

In addition to the requirements of paragraphs Mandated Practices and Control Methods, the following engineering controls and work practices shall be used:

- a. A Competent Person shall supervise the work.
- b. For indoor work, critical barriers shall be placed over all openings to the regulated area.
- c. Impermeable dropcloths shall be placed on surfaces beneath all removal activity.

3.6.7 Specific Control Methods for Class II Work

In addition to requirements of paragraph Class II Work, Class II work shall be performed using the following methods:

3.6.7.1 Vinyl and Asphalt Flooring Materials

When removing vinyl and asphalt flooring materials [which contain ACM] [from a building in which ACM has not been verified], the Contractor shall use the following practices as shown in RESPONSE ACTION DETAIL SHEET [56] [57] [58] [59] [60] [61] [62] [63] [64]. Resilient sheeting shall be removed by adequately wet methods. Tiles shall be removed intact (if possible); wetting is not required when tiles are heated and removed intact. Flooring or its backing shall not be sanded. Scraping of residual adhesive and/or backing shall be performed using wet methods. Mechanical chipping is prohibited unless performed in a negative pressure enclosure. Dry sweeping is prohibited. The Contractor shall use vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) to clean floors.

3.6.7.2 Roofing Material

When removing roofing materials which contain ACM as described in 29 CFR 1926, Section .1101(g)(8)(ii), the Contractor shall use the following practices as shown in RESPONSE ACTION DETAIL SHEET [74] [75]. Roofing material shall be removed in an intact state. Wet methods shall be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards. When removing built-up roofs, with asbestos-containing roofing felts and an aggregate surface, using a power roof cutter, all dust resulting from the cutting operations shall be collected by a HEPA dust collector, or shall be HEPA vacuumed by vacuuming along the cut line. Asbestos-containing roofing material shall not be dropped or thrown to the ground, but shall be lowered to the ground via covered, dust-tight chute, crane, hoist or other method approved by the Contracting Officer. Any ACM that is not intact shall be lowered to the ground as soon as practicable, but not later than the end of the work

shift. While the material remains on the roof it shall be kept wet or placed in an impermeable waste bag or wrapped in plastic sheeting. Intact ACM shall be lowered to the ground as soon as practicable, but not later than the end of the work shift. Unwrapped material shall be transferred to a closed receptacle precluding the dispersion of dust. Critical barriers shall be placed over roof level heating and ventilation air intakes.

3.6.7.3 Cementitious Siding and Shingles or Transite Panels

When removing cementitious asbestos-containing siding, shingles or transite panels the Contractor shall use the following practices shown in RESPONSE ACTION DETAIL SHEET [81] [82] [83]. Intentionally cutting, abrading or breaking siding, shingles, or transite panels is prohibited. Each panel or shingle shall be sprayed with amended water prior to removal. Nails shall be cut with flat, sharp instruments. Unwrapped or unbagged panels or shingles shall be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.

3.6.7.4 Gaskets

Gaskets shall be thoroughly wetted with amended water prior to removal and immediately placed in a disposal container. If a gasket is visibly deteriorated and unlikely to be removed intact, removal shall be undertaken within a glovebag. Any scraping to remove residue shall be performed wet.

3.6.7.5 Other Class II Jobs

The Contractor shall use the following work practices when performing Class II removal of [_____] ACM: The material shall be thoroughly wetted with amended water prior and during its removal. The material shall be removed in an intact state. Cutting, abrading or breaking the material is prohibited. The ACM removed shall be immediately bagged or wrapped.

3.6.8 Specific Control Methods for Class III Work

Class III asbestos work shall be conducted using engineering and work practice controls which minimize the exposure to employees performing the asbestos work and to bystander employees. The work shall be performed using wet methods and, to the extent feasible, using local exhaust ventilation. The Contractor shall use impermeable dropcloths and shall isolate the operation, using mini-enclosures or glovebag systems, where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of TSI or surfacing material.

3.6.9 Specific Control Methods for Class IV Work

Class IV jobs shall be conducted using wet methods, HEPA vacuums, and prompt clean-up of debris containing ACM. Employees cleaning up debris and waste in a regulated area where respirators are required shall wear the selected respirators.

3.6.10 Alternative Methods for Roofing Materials and Asphaltic Wrap

The Contractor shall use the following engineering controls and work practices when removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof cements, mastics, coatings, or flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous

compounds. If during the course of the job the material does not remain intact, the Contractor shall use the procedures described in paragraph Roofing Material. Before work begins, and as needed during the job, the Designated Competent Person shall conduct an inspection and determine that the roofing material is intact and will likely remain intact. The material shall not be sanded, abraded, or ground. Manual methods which would render the material non-intact shall not be used. Roofing material shall not be dropped or thrown to the ground but shall be lowered via covered, dust-tight chute, crane, hoist or other method approved by the Contracting Officer. All such material shall be removed from the roof as soon as practicable, but not later than the end of the work shift. Removal or disturbance of pipeline asphaltic wrap shall be performed using wet methods.

3.6.11 Cleaning After Asbestos Removal

After completion of all asbestos removal work, surfaces from which ACM has been removed shall be wet wiped or sponged clean, or cleaned by some equivalent method to remove all visible residue. Run-off water shall be collected and filtered through a dual filtration system. A first filter shall be provided to remove fibers 20 micrometers and larger, and a final filter provided that removes fibers 5 micrometers and larger. After the gross amounts of asbestos have been removed from every surface, remaining visible accumulations of asbestos on floors shall be collected using plastic shovels, rubber squeegees, rubber dustpans, and HEPA vacuum cleaners as appropriate to maintain the integrity of the regulated area. When TSI and surfacing material has been removed, workmen shall use HEPA vacuum cleaners to vacuum every surface. Surfaces or locations which could harbor accumulations or residual asbestos dust shall be checked after vacuuming to verify that no asbestos-containing material remains; and shall be re-vacuumed as necessary to remove the ACM.

3.6.12 Class I Asbestos Work Response Action Detail Sheets

The following Class I Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Troweled Wall Plaster on Masonry: See Sheet 32
- b. Troweled Wall Plaster on Stud Wall: See Sheet 33
- c. Troweled Ceiling Plaster on Structural Substrate: See Sheet 35
- d. Troweled Ceiling Plaster on Hung Ceiling: See Sheet 36
- e. Acoustical Wall Plaster on Masonry: See Sheet 42
- f. Acoustical Ceiling Plaster (Non-Asbestos Substrate): See Sheet 44
- g. Asbestos Decorative Paint on Plaster: See Sheet 46
- h. Asbestos-contaminated Masonry for Masonry Chimney: See Sheet 50
- i. Asbestos-contaminated Masonry Wall or Thermal Insulation: See Sheet 51
- j. Fireproofing or Thermal Surface Insulation: See Sheet 68
- k. Acoustical Ceiling Insulation: See Sheet 70

- l. Exterior Asbestos Stucco: See Sheet 79
- m. Duct Insulation: Duct work insulation removal shall not begin without the written authorization of the Contracting Officer stating that the HVAC system to be worked on is either isolated or inoperative and locked out of service. Forced air circulation is not permitted in ductwork while abatement work is in progress. See Sheet 101
- n. Pipe Insulation (Using a Glovebag): See Sheet 87
- o. Horizontal Pipe Insulation (Using a Containment Area): See Sheet 88
- p. Pipe Insulation (Using a Mini-Containment Area): See Sheet 89
- q. Storage Tank and Boiler Breeching Insulation: See Sheet 93. Written approval shall be obtained from the Contracting Officer before start of work on tanks and boiler breeching. The Contracting Officer will ensure that tanks and boilers have been valved off or shut down and allowed a sufficient amount of time to cool down. Insulation shall be sprayed with a mist of amended water or removal encapsulant. Amended water or removal encapsulant shall be allowed to saturate material to substrate. Bands or wires holding breeching or insulation to equipment shall be cut. Cover jackets shall be slit at seams, and sections removed and hand-placed in a polyethylene disposable bag. Exposed surfaces shall be continuously sprayed with amended water to minimize airborne dust. Insulation on tanks and boiler breeching shall not be allowed to drop to the floor. Residue shall be removed from tank and boiler surfaces. A water stream shall be used to dislodge insulation in joints or irregular spaces that cannot be reached with tools. Lagging on piping and insulation on fittings shall be removed. A penetrating encapsulant shall be sprayed on all exposed tank, boiler and boiler breeching surfaces.
- r. Troweled Wall Plaster on Studs: See Sheet 30
- s. Troweled Ceiling or Wall Plaster on Masonry: See Sheet 31
- t. Acoustical Ceiling on Wall Plaster: See Sheet 41
- u. Interior Stucco: See Sheet 78
- v. Exterior Stucco: See Sheet 80
- w. Pipe and Fitting Insulation (using Glovebag): See Sheet 86
- x. Storage Tank and Boiler Breeching: See Sheet 92
- y. Duct Insulation: See Sheet 100.

3.6.13 Class II Asbestos Work Response Action Detail Sheets

The following Class II Asbestos Work Response Action Detail Sheet is specified on Table 1 for each individual work task to be performed:

- a. Light Curtain: See Sheet 47

- b. Interior Asbestos Cement, Fiberboard and Drywall Panels: See Sheet 48
- c. Suspended Asbestos Cement Ceiling Tile: See Sheet 52
- d. Asbestos Cement Architectural Products: See Sheet 53
- e. Glued-on Acoustical Ceiling and Wall Tile: See Sheet 55
- f. Suspended Acoustical Ceiling Tile: See Sheet 54
- g. Vinyl or Vinyl Asbestos Tile Adhered to Concrete Floor System by Asbestos-Containing Adhesive: See Sheet 56
- h. Vinyl or Vinyl Asbestos Tile Adhered to Wood Floor System by Asbestos Containing Adhesive: See Sheet 60
- i. Vinyl Asbestos Tile Adhered to Concrete Floor System by Asbestos Containing Adhesive: See Sheet 57
- j. Vinyl Asbestos Tile Adhered to Concrete Floor System by Asbestos Free Adhesive: See Sheet 58
- k. Vinyl Asbestos Tile and Chemical Dissolution of Asbestos-Containing Adhesives on Concrete Floor System: See Sheet 59
- l. Vinyl Asbestos Tile Adhered to Wood Floor System by Asbestos-Containing Adhesive: See Sheet 61
- m. Vinyl Asbestos Tile Adhered to Wood Floor System by Asbestos Free Adhesive: See Sheet 62
- n. Sheet Flooring Adhered Wood Floor System: See Sheet 63
- o. Asbestos-Containing Sheet Flooring Adhered to Concrete Floor System by Asbestos-Containing Adhesive: See Sheet 64
- p. Carpeting (Asbestos-Containing or Contaminated): See Sheet 65
- q. Miscellaneous Asbestos-Containing Materials: See Sheet 45
- r. Built-Up Roofing and Flashing: See Sheet 74
- s. Roof, Shingles and Underlayment: See Sheet 75
- t. Asbestos Cement Siding: See Sheet 81
- u. Asbestos Cement Roofing: See Sheet 82
- v. Asbestos-Containing Walkway Cover: See Sheet 83
- w. Asbestos-Contaminated Metal Siding: See Sheet 84
- x. Asbestos Cement Sunscreen Louvers: See Sheet 85
- y. Electrical Wiring and Fixtures: See Sheet 95
- z. Asbestos Insulated Electrical Fixture: See Sheet 96

- aa. Boiler Firebox Insulation: The asbestos-containing boiler firebox lining shall be removed from out-of-service boilers before the boiler is dismantled: See Sheet 97.

3.6.14 Abatement of Asbestos Contaminated Soil

[Asbestos contaminated soil shall be removed from areas to a minimum depth of [2] [_____] inches. Soil shall be thoroughly dampened with amended water and then removed by manual shoveling into labeled containers. The workers shall be closely monitored for heat exhaustion. The minimum ventilation shall be 8 air changes per hour through a local exhaust HEPA system. See DETAIL SHEET 73.] [The Contractor has the option to propose encapsulation of soil instead of removal. Since soil encapsulation is highly dependent on soil chemistry, available skills for application and proprietary products, the Contractor shall first test the proposed soil encapsulant on a minimum 100 square feet of soil area onsite. The test shall be witnessed by the Contracting Officer's and the manufacturer's representative. A written application for encapsulation shall be submitted to the Contracting Officer with test results, encapsulant manufacturer's positive recommendation for use, a guarantee for satisfactory performance for 10 years, and limitation of application. The Contracting Officer reserves the right to accept or reject the application with no effect to the contract. If the application is accepted, the soil encapsulation shall proceed in compliance with all provisions and instructions of the encapsulant manufacturer and under the supervision of a person certified by the manufacturer who is trained and experienced in the proper application of the soil encapsulant. See DETAIL SHEET 72.] [A concrete slab of minimum [2] [_____] inch thickness shall be poured over the entire soil surface. Soil surface shall be thoroughly dampened before pouring concrete. Soil encapsulators and supervisors shall be primarily concrete workers trained to work in asbestos contaminated environments. See DETAIL SHEET 71.]

3.6.15 Enclosure of ACM

Isolation of ACM by construction of a permanent enclosure shall be conducted as specified in Section [_____] . Enclosures shall be as follows:

- a. Enclosure of Acoustical Wall Plaster on Masonry Wall: See Detail Sheet 37
- b. Enclosure of Asbestos Contaminated Soil: See Detail Sheet 71
- c. Enclosure of Acoustical Ceiling Plaster, Spray-on Fireproofing and Thermal Insulation Plaster: See Detail Sheet 43.

3.6.16 Encapsulation of ACM

Prior to applying any encapsulant, the entire surface area shall be inspected for loose, or damaged asbestos material:

- a. Penetrating Encapsulation: Before penetrating encapsulation is applied, asbestos removal work in the area shall be complete and the surfaces to be encapsulated shall be free of loose or damaged material. Substrate shall be evaluated before application to ensure that the encapsulant will not cause the substrate to fail in any way. Acoustical wall and ceiling plaster surfaces shall be encapsulated in accordance with manufacturer's recommendations. Plug samples shall be taken to determine if full penetration has

been achieved. If full penetration has not been achieved, surfaces shall be recoated while the matrix is still wet, until full penetration is achieved: See Detail Sheet 39.

- b. Bridging Encapsulation: Prior to applying the bridging encapsulant, the pre-encapsulation inspection shall be performed. The surface shall be encapsulated in sections of 1000 square feet or less as recommended by the encapsulant manufacturer. Upon completion of each section, the dry thickness of the bridging encapsulation shall be measured. Additional bridging encapsulant shall be applied to obtain the desired encapsulant thickness. Additional coats shall blend with the original bridging encapsulant. Bridging encapsulation shall include:

- (1) Troweled Wall Plaster: See Detail Sheet 29
- (2) Troweled Ceiling Plaster: See Detail Sheet 34
- (3) Acoustical Wall Plaster: See Detail Sheet 38
- (4) Acoustical Ceiling Plaster: See Detail Sheet 34
- (5) Asbestos Cement Wall, Fiberboard and Drywall Panels: See Detail Sheet 49
- (6) Exterior Asbestos Stucco: See Detail Sheet 76
- (7) Interior Asbestos Stucco: See Detail Sheet 77
- (8) Storage Tank and Boiler Breeching: See Detail Sheet 91
- (9) Boiler and Piping Gasket: See Detail Sheet 98.

3.6.17 Combination Encapsulation of Acoustical Wall and Ceiling Plaster

The combination penetrating/bridging encapsulation system shall be installed by first applying the penetrating encapsulant and then the bridging encapsulant: See Detail Sheet 40.

3.6.18 Response Action Detail Sheets for Repair of Class I Materials

- a. Troweled Wall Plaster on Studs: See Detail Sheet 30
- b. Troweled Ceiling or Wall Plaster on Masonry: See Detail Sheet 31
- c. Acoustical Ceiling on Wall Plaster: See Detail Sheet 41
- d. Interior Stucco: See Detail Sheet 78
- e. Exterior Stucco: See Detail Sheet 80
- f. Pipe and Fitting Insulation (using Glovebag): See Detail Sheet 86
- g. Storage Tank and Boiler Breeching: See Detail Sheet 92
- h. Duct Insulation: See Detail Sheet 100
- i. Exposed Pipe Insulation Edges: Asbestos insulation to remain shall have exposed edges contained; the following steps shall be performed: Wet and cut the rough ends true and square with sharp tools and then encapsulate the edges with a 1/4 inch thick layer of non-asbestos-containing insulating cement troweled to a smooth hard finish; when cement is dry, lag the end with a layer of non-asbestos lagging cloth, overlapping the existing ends by 4 inches.

3.6.19 Response Action Detail Sheets for Repair of Class II Materials

- a. Vinyl or Vinyl Asbestos Tile Adhered to Concrete Floor System by Asbestos-Containing Adhesive: See Detail Sheet 56
- b. Vinyl or Vinyl Asbestos Tile Adhered to Wood Floor System by Asbestos Containing Adhesive: See Detail Sheet 60.

3.6.20 Encasement of ACM

Prior to applying the first layer of the polymer system, the structural stability of the ACM shall be verified. Encasement materials shall not be applied until all removal work within the regulated area has been completed. Mechanical fasteners shall be installed to wall, mesh or deck as needed. A low density cellular or polymer shall be applied to a depth of approximately 1 inch. The asbestos substrate shall be completely encased. A polymer finish containing fiberglass shall be applied over the low density cellular foam to a thickness of 1 inch. All system components shall be applied according to the system manufacturer's instructions and data. Encased material shall be decontaminated. Encasement shall be applied to:

- a. Beams and Decking: See Detail Sheet 66
- b. Columns: See Detail Sheet 67
- c. Acoustical Ceiling Insulation: See Detail Sheet 69
- d. Storage Tank and Boiler Breeching: See Detail Sheet 90.

3.6.21 Sealing Contaminated Items Designated for Disposal

Contaminated architectural, mechanical, and electrical appurtenances such as Venetian blinds, full height partitions, carpeting, duct work, pipes and fittings, radiators, light fixtures, conduit panels, and other contaminated items designated for removal shall be coated with an asbestos lockdown encapsulant at the demolition site before being removed from the asbestos control area. These items [shall] [shall not] be vacuumed prior to application of the lockdown encapsulant. The asbestos lockdown encapsulant shall be tinted a contrasting color and shall be spray applied by airless method. Thoroughness of sealing operation shall be visually gauged by the extent of colored coating on exposed surfaces.

3.7 FINAL CLEANING AND VISUAL INSPECTION

Upon completion of abatement, the regulated area shall be cleaned by collecting, packing, and storing all gross contamination; see SET-UP DETAIL SHEETS 9, 14 and 20. A final cleaning shall be performed using HEPA vacuum and wet cleaning of all exposed surfaces and objects in the regulated area. Upon completion of the cleaning, the Contractor shall conduct a visual pre-inspection of the cleaned area in preparation for a final inspection before final air clearance monitoring and recleaning, as necessary. Upon completion of the final cleaning, the Contractor and the Contracting Officer shall conduct a final visual inspection of the cleaned regulated area in accordance with ASTM E 1368 and document the results on the Final Cleaning and Visual Inspection as specified on the SET-UP DETAIL SHEET 19. If the Contracting Officer rejects the clean regulated area as not meeting final cleaning requirements, the Contractor shall reclean as necessary and have a follow-on inspection conducted with the Contracting Officer. Recleaning and follow-up reinspection shall be at the Contractor's expense.

3.8 LOCKDOWN

Prior to removal of plastic barriers and after clean-up of gross contamination and final visual inspection, a post removal (lockdown) encapsulant shall be spray applied to ceiling, walls, floors, and other surfaces in the regulated area.

3.9 EXPOSURE ASSESSMENT AND AIR MONITORING

3.9.1 General Requirements For Exposure

Exposure assessment, air monitoring and analysis of airborne concentration of asbestos fibers shall be performed in accordance with 29 CFR 1926, Section .1101, the Contractor's air monitoring plan, and as specified. Personal exposure air monitoring (collected at the breathing zone) that is representative of the exposure of each employee who is assigned to work within a regulated area shall be performed by the Contractor's Designated IH.

Breathing zone samples shall be taken for at least 25 percent of the workers in each shift, or a minimum of 2, whichever is greater. Air monitoring results at the 95 percent confidence level shall be calculated as shown in Table 2 at the end of this section. The Contractor shall provide an onsite independent testing

laboratory with qualified analysts and appropriate equipment to conduct sample analyses of air samples using the methods prescribed in 29 CFR 1926, Section .1101, to include NIOSH 84-100 Method 7400.] Preabatement and abatement environmental air monitoring shall be performed by the Contractor's Designated IH. Final clearance

environmental air monitoring, shall be performed by the Contractor's Designated IH. Environmental and final

clearance air monitoring shall be performed using NIOSH 84-100 Method 7400 (PCM) with optional confirmation of results by NIOSH 84-100 Method 7402 (TEM). For environmental and

final clearance, air monitoring shall be conducted at a sufficient velocity and duration to establish the limit of detection of the method used at 0.005 f/cc. Confirmation of asbestos fiber concentrations (asbestos f/cc) from environmental and final clearance samples collected and analyzed by NIOSH 84-100 Method 7400 (total f/cc) may be conducted using TEM in accordance with NIOSH 84-100 Method 7402. When such confirmation is conducted, it shall be from the same sample filter used for the NIOSH 84-100

Method 7400 PCM analysis. For all Contractor required environmental or final clearance air monitoring, confirmation of asbestos fiber concentrations, using NIOSH 84-100 Method 7402, shall be at the Contractor's expense. Monitoring may be duplicated by the Government at the discretion of the Contracting Officer. Results of breathing zone samples shall be posted at the job site and made available to the Contracting Officer. The Contractor shall maintain a fiber concentration inside a regulated area less than or equal to 0.1 f/cc expressed as an 8 hour, time-weighted average (TWA) during the conduct of the asbestos abatement. If fiber concentration rises above 0.1 f/cc, work procedures shall be investigated with the Contracting Officer to determine the cause. At the discretion of the Contracting Officer, fiber concentration may exceed 0.1 f/cc but shall not exceed 1.0 f/cc expressed as an 8-hour TWA. The Contractor's workers shall not be exposed to an airborne fiber concentration in excess of 1.0 f/cc, as averaged over a sampling period of 30 minutes. Should either an environmental concentration of 1.0 f/cc expressed as an 8-hour TWA or a personal excursion concentration of 1.0 f/cc expressed as a 30-minute sample occur inside a regulated work area, the Contractor shall stop work immediately, notify the Contracting Officer,

and implement additional engineering controls and work practice controls to reduce airborne fiber levels below prescribed limits in the work area. Work shall not restart until authorized by the Contracting Officer.

3.9.2 Initial Exposure Assessment

The Contractor's Designated IH shall conduct an exposure assessment immediately before or at the initiation of an asbestos abatement operation to ascertain expected exposures during that operation. The assessment shall be completed in time to comply with the requirements which are triggered by exposure data or the lack of a negative exposure assessment, and to provide information necessary to assure that all control systems planned are appropriate for that operation. The assessment shall take into consideration both the monitoring results and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the Contractor which indicate the levels of airborne asbestos likely to be encountered on the job. [For Class I asbestos work, until the employer conducts exposure monitoring and documents that employees on that job will not be exposed in excess of PELs, or otherwise makes a negative exposure assessment, the Contractor shall presume that employees are exposed in excess of the PEL-TWA and PEL-Excursion Limit.]

3.9.3 Negative Exposure Assessment

The Contractor shall provide a negative exposure assessment for the specific asbestos job which will be performed. The negative exposure assessment shall be provided within 3 days of the initiation of the project and conform to the following criteria:

- a. Objective Data: Objective data demonstrating that the product or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the PEL-TWA and PEL-Excursion Limit under those work conditions having the greatest potential for releasing asbestos.
- b. Prior Asbestos Jobs: Where the Contractor has monitored prior asbestos jobs for the PEL and the PEL-Excursion Limit within 12 months of the current job, the monitoring and analysis were performed in compliance with asbestos standard in effect; the data were obtained during work operations conducted under workplace conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations; the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job; and these data show that under the conditions prevailing and which will prevail in the current workplace, there is a high degree of certainty that the monitoring covered exposure from employee exposures will not exceed the PEL-TWA and PEL-Excursion Limit.
- c. Initial Exposure Monitoring: The results of initial exposure monitoring of the current job, made from breathing zone air samples that are representative of the 8-hour PEL-TWA and 30-minute short-term exposures of each employee. The monitoring covered exposure from operations which are most likely during the performance of the entire asbestos job to result in exposures over

the PELs.

3.9.4 NOT USED

3.9.5 Preabatement Environmental Air Monitoring

Preabatement environmental air monitoring shall be established 1 day prior to the masking and sealing operations for each regulated area to determine background concentrations before abatement work begins. As a minimum, preabatement air samples shall be collected using NIOSH 84-100 Method 7400, PCM at these locations: outside the building; inside the building, but outside the regulated area perimeter; and inside each regulated work area. One sample shall be collected for every 2000 square feet of floor space. At least 2 samples shall be collected outside the building: at the exhaust of the HEPA unit; and downwind from the abatement site. The PCM samples shall be analyzed within 24 hours; and if any result in fiber concentration greater than 0.01 f/cc, asbestos fiber concentration shall be confirmed using NIOSH 84-100 Method 7402 (TEM).

3.9.6 Environmental Air Monitoring During Abatement

Until an exposure assessment is provided to the Contracting Officer, environmental air monitoring shall be conducted at locations and frequencies that will accurately characterize any evolving airborne asbestos fiber concentrations. The assessment shall demonstrate that the product or material containing asbestos minerals, or the abatement involving such product or material, cannot release airborne asbestos fibers in concentrations exceeding 0.01 f/cc as a TWA under those work conditions having the greatest potential for releasing asbestos. The monitoring shall be at least once per shift at locations including, but not limited to, close to the work inside a regulated area; preabatement sampling locations; outside entrances to a regulated area; close to glovebag operations; representative locations outside of the perimeter of a regulated area; inside clean room; and at the exhaust discharge point of local exhaust system ducted to the outside of a containment (if used). If the sampling outside regulated area shows airborne fiber levels have exceeded background or 0.01 f/cc, whichever is greater, work shall be stopped immediately, and the Contracting Officer notified. The condition causing the increase shall be corrected. Work shall not restart until authorized by the Contracting Officer.

3.9.7 Final Clearance Air Monitoring

Prior to conducting final clearance air monitoring, the Contractor and the Contracting Officer shall conduct a final visual inspection of the regulated area where asbestos abatement has been completed. The final visual inspection shall be as specified in SET-UP DETAIL SHEET 19. Final clearance air monitoring shall not begin until acceptance of the Contractor's final cleaning by the Contracting Officer. The Contractor's Designated IH shall conduct final clearance air monitoring using aggressive air sampling techniques as defined in EPA 560/5-85-024 or as otherwise required by federal or state requirements. The sampling and analytical method used will be [NIOSH 84-100 Method 7400 (PCM) and Table 3 with confirmation of results by NIOSH 84-100 Method 7402 (TEM).] [the EPA TEM Method specified at 40 CFR 763 and Table 4.]

3.9.7.1 Final Clearance Requirements, NIOSH PCM Method

For PCM sampling and analysis using NIOSH 84-100 Method 7400, the fiber concentration inside the abated regulated area, for each airborne sample, shall be less than 0.01 f/cc. The abatement inside the regulated area is considered complete when every PCM final clearance sample is below the clearance limit. If any sample result is greater than 0.01 total f/cc, the asbestos fiber concentration (asbestos f/cc) shall be confirmed from that same filter using NIOSH 84-100 Method 7402 (TEM) at Contractor's expense. If any confirmation sample result is greater than 0.01 asbestos f/cc, abatement is incomplete and cleaning shall be repeated. Upon completion of any required recleaning, resampling with results to meet the above clearance criteria shall be done.

3.9.7.2 NOT USED

3.9.7.3 Air Clearance Failure

If clearance sampling results fail to meet the final clearance requirements, the Contractor shall pay all costs associated with the required recleaning, resampling, and analysis, until final clearance requirements are met.

3.9.8 Air-Monitoring Results and Documentation

Air sample fiber counting shall be completed and results provided within 24 hours (breathing zone samples), and 24 hours (environmental/clearance monitoring) after completion of a sampling period. The Contracting Officer shall be notified immediately of any airborne levels of asbestos fibers in excess of established requirements. Written sampling results shall be

provided within 5 working days of the date of collection. The written results shall be signed by testing laboratory analyst, testing laboratory principal and the Contractor's Designated IH. The air sampling results shall be documented on a Contractor's daily air monitoring log. The daily air monitoring log shall contain the following information for each sample:

- a. Sampling and analytical method used;
- b. Date sample collected;
- c. Sample number;
- d. Sample type: BZ = Breathing Zone (Personal), P = Preabatement, E = Environmental, C = Abatement Clearance;
- e. Location/activity/name where sample collected;
- f. Sampling pump manufacturer, model and serial number, beginning flow rate, end flow rate, average flow rate (L/min);
- g. Calibration date, time, method, location, name of calibrator, signature;
- h. Sample period (start time, stop time, elapsed time (minutes));
- i. Total air volume sampled (liters);
- j. Sample results (f/cc and S/mm square) if EPA methods are required for final clearance;
- k. Laboratory name, location, analytical method, analyst, confidence level. In addition, the printed name and a signature and date block for the Industrial Hygienist who conducted the sampling and for the Industrial Hygienist who reviewed the daily air monitoring log verifying the accuracy of the information.

3.10 CLEARANCE CERTIFICATION

When asbestos abatement is complete, ACM waste is removed from the regulated areas, and final clean-up is completed, the Contracting Officer will certify the areas as safe before allowing the warning signs and boundary warning tape to be removed. After final clean-up and acceptable airborne concentrations are attained, but before the HEPA unit is turned off and the containment removed, the Contractor shall remove all pre-filters on the building HVAC system and provide new pre-filters. The Contractor shall dispose of such filters as asbestos contaminated materials. HVAC, mechanical, and electrical systems shall be re-established in proper working order. The Contractor and the Contracting Officer shall visually inspect all surfaces within the containment for residual material or accumulated debris. The Contractor shall reclean all areas showing dust or residual materials. The Contracting Officer will certify in writing that the area is safe before unrestricted entry is permitted. The Government will have the option to perform monitoring to certify the areas are safe before entry is permitted.

3.11 CLEANUP AND DISPOSAL

3.11.1 Title to ACM Materials

ACM material resulting from abatement work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified and in accordance with applicable federal, state and local regulations.

3.11.2 Collection and Disposal of Asbestos

All ACM waste shall be collected and including contaminated wastewater filters, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing, shall be collected and placed in leak-tight containers such as double plastic bags (see DETAIL SHEET 9A); sealed double wrapped polyethylene sheet (see DETAIL 9B); sealed fiberboard boxes (see DETAIL SHEET 9C); or other approved containers. Waste within the containers shall be wetted in case the container is breached. Asbestos-containing waste shall be disposed of at an EPA, state and local approved asbestos landfill off Government property. For temporary storage, sealed impermeable containers shall be stored in an asbestos waste load-out unit or in a storage/transportation conveyance (i.e., dumpster, roll-off waste boxes, etc.) in a manner acceptable to and in an area assigned by the Contracting Officer. Procedure for hauling and disposal shall comply with 40 CFR 61, Subpart M, state, regional, and local standards.

3.11.3 Scale Weight Measurement

Scales used for measurement shall be public scales. Weighing shall be at a point nearest the work at which a public scale is available. Scales shall be standard truck scales of the beam type; scales shall be equipped with the type registering beam and an "over and under" indicator; and shall be capable of accommodating the entire vehicle. Scales shall be tested, approved and sealed by an inspector of the State of [_____]. Scales shall be calibrated and resealed as often as necessary and at least once every three months to ensure continuous accuracy. Vehicles used for hauling ACM shall be weighed empty daily at such time as directed and each vehicle shall bear a plainly legible identification mark.

3.11.4 Weigh Bill and Delivery Tickets

Copies of weigh bills and delivery tickets shall be submitted to the Contracting Officer during the progress of the work. The Contractor shall furnish the Contracting Officer scale tickets for each load of ACM weighed and certified. These tickets shall include tare weight; identification mark for each vehicle weighed; and date, time and location of loading and unloading. Tickets shall be furnished at the point and time individual trucks arrive at the worksite. A master log of all vehicle loading shall be furnished for each day of loading operations. Before the final statement is allowed, the Contractor shall file with the Contracting Officer certified weigh bills and/or certified tickets and manifests of all ACM actually disposed by the Contractor for this contract.

3.11.5 Asbestos Waste Shipment Record

The Contractor shall complete and provide the Contracting Officer final completed copies of the Waste Shipment Record for all shipments of waste material as specified in 40 CFR 61, Subpart M and other required state waste manifest shipment records, within 3 days of delivery to the landfill.

Each Waste Shipment Record shall be signed and dated by the Contractor the waste transporter and disposal facility operator.

TABLE 1

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet _____ of _____

There is a separate data sheet for each individual work task.

1. WORK TASK DESIGNATION NUMBER _____
2. LOCATION OF WORK TASK _____
3. BRIEF DESCRIPTION OF MATERIAL TO BE ABATED: _____
- a. Type of Asbestos _____
- b. Percent asbestos content _____%
4. ABATEMENT TECHNIQUE TO BE USED _____
5. OSHA ASBESTOS CLASS DESIGNATION FOR WORK TASK _____
6. EPA NESHAP FRIABILITY DESIGNATION FOR WORK TASK
Friable _____ Non-friable Category I _____
Non-friable Category II _____
7. FORM _____ and CONDITION OF ACM: GOOD _____ FAIR _____ POOR _____
8. QUANTITY: METERS _____, SQUARE METERS _____
- 8a. QUANTITY: LINEAR FT. _____, SQUARE FT. _____
9. RESPONSE ACTION DETAIL SHEET NUMBER FOR WORK TASK _____
10. SET-UP DETAIL SHEET NUMBERS
FOR WORK TASK _____, _____, _____, _____,
_____, _____, _____, _____.

NOTES:

- (1) Numeric sequence of individual work tasks (1,2,3,4, etc.) for each regulated area. Each category of EPA friability/OSHA class has a separate task.
- (2) Specific location of work (building, floor, area, e.g., Building 1421, 2nd Floor, Rm 201)
- (3) A description of material to be abated (example: horizontal pipe, cement wall panels, tile, stucco, etc.) type of asbestos (chrysotile, amosite, crocidolite, etc.); and % asbestos content.
- (4) Technique to be used: Removal = REM; Encapsulation = ENCAP; Encasement = ENCAS; Enclosure = ENCL; Repair = REP.
- (5) Class designation: Class I, II, III, or IV (OSHA designation).
- (6) Friability of materials: Check the applicable EPA NESHAP friability designation.
- (7) Form: Interior or Exterior Architectural = IA or EA; Mechanical/Electrical = ME.
Condition: Good = G; Fair = F; Poor = P.
- (8) Quantity of ACM for each work task in meters or square meters.
- (8a) Quantity of ACM for each work task in linear feet or square feet.
- (9) Response Action Detail Sheet specifies the material to be abated and the methods to be used. There is only one Response Action Detail Sheet for each abatement task.
- (10) Set-up Detail Sheets indicate containment and control methods used in support of the response action (referenced in the selected Response Action Detail Sheet).

TABLE 2

FORMULA FOR CALCULATION OF THE 95 PERCENT CONFIDENCE LEVEL
(Reference: NIOSH 7400)

$$\text{Fibers/cc(01.95 percent CL)} = X + [(X) * (1.645) * (CV)]$$

Where: $X = ((E)(AC))/((V)(1000))$

$$E = ((F/Nf) - (B/Nb))/Af$$

CV = The precision value; 0.45 shall be used unless the analytical laboratory provides the Contracting Officer with documentation (Round Robin Program participation and results) that the laboratory's precision is better.

AC = Effective collection area of the filter in square millimeters

V = Air volume sampled in liters

E = Fiber density on the filter in fibers per square millimeter

F/Nf = Total fiber count per graticule field

B/Nb = Mean field blank count per graticule field

Af = Graticule field area in square millimeters

$$\text{TWA} = C1/T1 + C2/T2 = Cn/Tn$$

Where: C = Concentration of contaminant

T = Time sampled.

TABLE 3
NIOSH METHOD 7400
PCM ENVIRONMENTAL AIR SAMPLING PROTOCOL (NON-PERSONAL)

Sample Location	Minimum No. of Samples	Filter Pore Size (Note 1)	Min. Vol. (Note 2) (Liters)	Sampling Rate (liters/min.)
Inside Abatement Area	0.5/140 Square Meters (Notes 3 & 4)	0.45 microns	3850	2-16
Each Room in 1 Abatement Area Less than 140 Square meters		0.45 microns	3850	2-16
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

Notes:

1. Type of filter is Mixed Cellulose Ester.
2. Ensure detection limit for PCM analysis is established at 0.005 fibers/cc.
3. One sample shall be added for each additional 140 square meters. (The corresponding I-P units are 5/1500 square feet).
4. A minimum of 5 samples are to be taken per abatement area, plus 2 field blanks.

TABLE 4
EPA AHERA METHOD: TEM AIR SAMPLING PROTOCOL

Location Sampled	Minimum No. of Samples	Filter Pore Size	Min. Vol. (Liters)	Sampling Rate (liters/min.)
Inside Abatement Area	5	0.45 microns	1500	2-16
Outside Abatement Area	5	0.45 microns	1500	2-16
Field Blank	2	0.45 microns	0	0
Laboratory Blank	1	0.45 microns	0	0

Notes:

1. Type of filter is Mixed Cellulose Ester.
2. The detection limit for TEM analysis is 70 structures/square mm.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

PROJECT NAME _____ CONTRACT NO. _____
PROJECT ADDRESS _____
CONTRACTOR FIRM NAME _____
EMPLOYEE'S NAME _____, _____, _____,
(Print) (Last) (First) (MI)

Social Security Number: _____-_____-_____,

WORKING WITH ASBESTOS CAN BE DANGEROUS. INHALING ASBESTOS FIBERS HAS BEEN LINKED WITH TYPES OF LUNG DISEASE AND CANCER. IF YOU SMOKE AND INHALE ASBESTOS FIBERS, THE CHANCE THAT YOU WILL DEVELOP LUNG CANCER IS GREATER THAN THAT OF THE NONSMOKING PUBLIC.

Your employer's contract for the above project requires that you be provided and you complete formal asbestos training specific to the type of work you will perform and project specific training; that you be supplied with proper personal protective equipment including a respirator, that you be trained in its use; and that you receive a medical examination to evaluate your physical capacity to perform your assigned work tasks, under the environmental conditions expected, while wearing the required personal protective equipment. These things are to be done at no cost to you. By signing this certification, you are acknowledging that your employer has met these obligations to you. The Contractor's Designated Industrial Hygienist will check the block(s) for the type of formal training you have completed. Review the checked blocks prior to signing this certification.

FORMAL TRAINING:

_____ a. For Competent Persons and Supervisors: I have completed EPA's Model Accreditation Program (MAP) training course, "Contractor/Supervisor", that meets this State's requirements.

_____ b. For Workers:

_____ (1) For OSHA Class I work: I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (2) For OSHA Class II work (where there will be abatement of more than one type of Class II materials, i.e., roofing, siding, floor tile, etc.): I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (3) For OSHA Class II work (there will only be abatement of one type of Class II material):

_____ (a) I have completed an 8-hour training class on the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls of 29 CFR 1926, Section .1101(g) and hands-on training.

_____ (b) I have completed EPA's MAP training course, "Worker", that meets this State's requirements.

_____ (4) For OSHA Class III work: I have completed at least a 16-hour course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, Section .92(a)(2) and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101, and hands-on training.

CERTIFICATE OF WORKER'S ACKNOWLEDGMENT

_____ (5) For OSHA Class IV work: I have completed at least a 2-hr course consistent with EPA requirements for training of local education agency maintenance and custodial staff at 40 CFR 763, (a)(1), and the elements of 29 CFR 1926, Section .1101(k)(9)(viii), in addition to the specific work practices and engineering controls at 29 CFR 1926, Section .1101(g) and hands-on training.

_____ c. Workers, Supervisors and the Designated Competent Person: I have completed annual refresher training as required by EPA's MAP that meets this State's requirements.

PROJECT SPECIFIC TRAINING:

_____ I have been provided and have completed the project specific training required by this Contract. My employer's Designated Industrial Hygienist and Designated Competent Person conducted the training.

RESPIRATORY PROTECTION:

_____ I have been trained in accordance with the criteria in the Contractor's Respiratory Protection program. I have been trained in the dangers of handling and breathing asbestos dust and in the proper work procedures and use and limitations of the respirator(s) I will wear. I have been trained in and will abide by the facial hair and contact lens use policy of my employer.

RESPIRATOR FIT-TEST TRAINING:

_____ I have been trained in the proper selection, fit, use, care, cleaning, maintenance, and storage of the respirator(s) that I will wear. I have been fit-tested in accordance with the criteria in the Contractor's Respiratory Program and have received a satisfactory fit. I have been assigned my individual respirator. I have been taught how to properly perform positive and negative pressure fit-check upon donning negative pressure respirators each time.

MEDICAL EXAMINATION:

_____ I have had a medical examination within the last twelve months which was paid for by my employer. The examination included: health history, pulmonary function tests, and may have included an evaluation of a chest x-ray. A physician made a determination regarding my physical capacity to perform work tasks on the project while wearing personal protective equipment including a respirator. I was personally provided a copy and informed of the results of that examination. My employer's Industrial Hygienist evaluated the medical certification provided by the physician and checked the appropriate blank below. The physician determined that there:

_____ were no limitations to performing the required work tasks.

_____ were identified physical limitations to performing the required work tasks.

Date of the medical examination _____

Employee Signature _____ date _____

Contractor's Industrial

Hygienist Signature _____ date _____

-- End of Section --

SECTION 13281A

LEAD HAZARD CONTROL ACTIVITIES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	(1979; R 1991) Fundamentals Governing the Design and Operation of Local Exhaust Systems
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AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM E 1553	(1993) Practice for Collection of Airborne Particulate Lead During Abatement and Construction Activities
-------------	--

ASTM E 1613	(1999) Standard Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption (GFAAS) Techniques
-------------	---

ASTM E 1644	(1998) Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead
-------------	--

ASTM E 1726	(1995) Sample Digestion of Soils for the Determination of Lead by Atomic Spectrometry
-------------	---

ASTM E 1727	(1999) Field Collection of Soil Samples for Lead Determination by Atomic Spectrometry Techniques
-------------	--

ASTM E 1728	(1999) Field Collection of Settled Dust Samples Using Wipe Sampling Methods for Lead Determination by Atomic Spectrometry Techniques
-------------	--

ASTM E 1729	(1999) Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques
-------------	---

ASTM E 1741	(2000) Preparation of Airborne Particulate Lead Samples Collected During Abatement and Construction Activities for Subsequent
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Analysis by Atomic Spectrometry

ASTM E 1792	(1996a) Wipe Sampling Materials for Lead in Surface Dust
ASTM E 1795	(2000) Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings
ASTM E 1796	(1997) Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings
ASTM E 1797	(2000) Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 701	(1999) Methods of Fire Tests for Flame-Resistant Textiles and Films
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NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 84-100	(1984; Supple 1985, 1987, 1988 & 1990) NIOSH Manual of Analytical Methods
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U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(1996) U.S. Army Corps of Engineers Safety and Health Requirements Manual
------------	---

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

HUD 6780	(1995; Errata Aug 1996; Rev Ch. 7 - 1997) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing
----------	--

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 747-K-99-001	(1999) Protect Your Family From Lead in Your Home
------------------	---

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

24 CFR 35	Lead-Based Paint Poisoning Prevention in Certain Residential Structures
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 745	Lead-Based Paint Poisoning Prevention in Certain Residential Structures

UNDERWRITERS LABORATORIES (UL)

UL 586	(1996; Rev thru Aug 1999) High-Efficiency,
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Particulate, Air Filter Units

1.2 DEFINITIONS

- a. Lead Hazard Control Activity - Any construction work where a worker may be occupationally exposed to lead and procedures have to be followed to assure that: 1). Lead inside the lead hazard control area is cleaned up to appropriate levels and 2). Lead dust does not disperse outside the lead hazard control area at unacceptable levels.
- b. Public/Commercial Building - Buildings on real property, including residential real property, generally accessible to the public except target housing, child occupied facilities and industrial buildings. Examples include offices, stores/shopping centers, churches, schools, barracks, hospitals, museums, airports, hotels, convention centers.
- c. Industrial Building - Any building used for industrial purposes where normal operations inside the building may produce lead aerosol that will settle out on inside surfaces.
- d. Target Housing - Residential real property which is housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any one or more children age 6 years or under resides or is expected to reside in such housing for the elderly or persons with disabilities) or any 0 bedroom dwelling.
- e. Child-occupied Facility - Real property which is a building or portion of a building constructed prior to 1978 visited regularly by the same child, 6 years of age or under, on at least two different days, provided that each day's visit lasts at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities include but are not limited to, day-care centers, preschools and kindergarten classrooms.
- f. Residential Real Property - Real property on which there is situated one or more residential dwellings used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons.

1.3 DESCRIPTION OF WORK

The work covered by this section includes work tasks, on the individual work task data sheets at the end of this section, and the precautions specified in this section for the protection of workers, building occupants and the environments.

1.3.1 Protection of Existing Areas To Remain

All project work including, but not limited to, lead hazard work, storage, transportation, and disposal shall be performed without damaging or contaminating adjacent work and areas. Where such work or areas are damaged or contaminated, the Contractor shall restore work and areas to the original condition at no additional cost to the Government.

1.3.2 Coordination with Other Work

The contractor shall coordinate lead hazard control activities with work being performed in adjacent areas. Coordination procedures shall be explained in the Contractor's Accident Prevention Plan and shall describe how the Contractor will prevent lead exposure to other contractors and/or Government personnel performing work unrelated to lead hazard control activities.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Materials and Equipment; [____], [____]
Expendable Supplies; [____], [____]

A description of the materials, equipment and expendable supplies required; including Material Safety Data Sheets (MSDSs) for material brought onsite to perform the work.

Qualifications; G, [____]

A report providing evidence of qualifications and designating responsibilities for personnel and laboratories.

SD-06 Test Reports

Pressure Differential Log; [____], [____]
Licences, Permits, and Notifications; G, [____]
Accident Prevention Plan (APP); G, [____]

A report describing how the Contractor will protect workers, building occupants, and building contents while performing lead hazard control activities; and how project clearance will be performed.

Sampling and Analysis; G, [____]

A log of the analytical results required for the sampling. The log shall be kept current.

Clearance Report; G, [____]

Report prepared by the QSHP.

1.5 QUALIFICATIONS

1.5.1 Qualifications and Organization Report

The Contractor shall furnish a qualification and organization report. The report shall describe the qualifications of the qualified safety and health professional (QSHP), onsite safety and health supervisor (OSHS), labor staff and the independent risk assessor. The report shall include an organization chart showing the Contractor's personnel by name and title and project specific responsibilities and authorities. The report shall

describe the qualifications of the laboratories selected for this project. The report shall be signed by the Contractor and the qualified safety and health professional to indicate that all personnel and laboratories comply with certification and experience requirements of this section and that project personnel have been given the authority to complete the tasks assigned to them.

1.5.2 Personnel and Subcontractor Responsibilities and Qualifications

1.5.2.1 Qualified Safety and Health Professional (QSHP)

The QSHP shall be responsible for development of project specific requirements in the Accident Prevention Plan (APP); supervise implementation of the APP requirements; visit the site as needed to verify effectiveness of the APP and to coordinate resolution of unknown situations that may develop as the work progresses; be available to provide consultation to the Onsite Safety and Health Supervisor (OSHS); review sampling and analytical results to evaluate occupational exposure levels, verify effectiveness of controls and determine if clearance requirements have been met. The QSHP shall have demonstrable experience with the implementation of occupational safety and health regulations.

1.5.2.2 Lead Hazard Control Workers

Lead Hazard Control workers shall be responsible for performing the labor necessary to complete the lead hazard control activities required in this contract.

1.5.2.3 Independent Certified Risk Assessor

The independent Certified Risk Assessor shall be a subcontractor to the prime Contractor on the project. The risk assessor shall be responsible to perform the sampling and evaluating the analytical data to verify clearance levels have been achieved. The independent risk assessor shall sign the clearance report indicating clearance requirements for the contract have been met.

1.5.2.4 Testing Laboratories

The laboratory selected to perform analysis on paint chip, soil or dust wipe samples shall be accredited by EPA's National Lead Laboratory Accreditation Program (NLLAP). The laboratory selected perform analysis on worker exposure (industrial hygiene) samples shall be in the American Industrial Hygiene Association's Industrial Hygiene Laboratory Accreditation Program (IHLAP) and shall be successfully participating in the Proficiency Analytical Testing (PAT) program for lead.

1.5.2.5 Blood Lead Testing

The laboratory selected to perform analysis on worker blood samples shall be approved by OSHA and meet the requirements contained in http://www.osha-slc.gov/OCIS/toc_bloodlead.html.

1.5.2.6 Disposal Facility and Transporter

The Contractor shall furnish written evidence that the landfill to be used is approved for lead disposal by [USEPA] [and] [state] [and] [local] requirements. Copies of any required signed agreements between the Contractor (including subcontractors and transporters) and the lead

disposal facility shall be provided.

1.6 REGULATORY REQUIREMENTS

In addition to the detailed requirements of this specification, work shall be performed in accordance with requirements of EM 385-1-1 and applicable regulations including, but not limited to 29 CFR 1910, 29 CFR 1926, especially Section .62, and the accepted Accident Prevention Plan with Appendices. Matters of interpretation of the standards shall be resolved to the satisfaction of and with the concurrence of, the Contracting Officer before starting work. Where these requirements vary, the most stringent shall apply. The following State and local statutes, regulations and requirements apply to lead hazard control activities to be performed: State, [____], Local [____].

1.7 ACCIDENT PREVENTION PLAN (APP)

1.7.1 APP Content and Organization

The Contractor's Accident Prevention Plan shall be organized into 5 parts, consisting of the overall plan and 4 appendices. The overall plan shall address each element in Appendix A of EM 385-1-1 in project specific detail. The elements are: a. Signature Sheet, b. Background Information, c. Statement of Safety and Health Policy, d. Responsibilities and Lines of Authorities, e. Subcontractors and Suppliers, f. Training, g. Safety and Health Inspections, h. Safety and Health Expectations, Incentive Programs and Compliance, i. Accident Reporting, j. Medical Support, k. Corporate Plans and Programs required by this contract, (HAZCOM, Respiratory Protection).

1.7.1.1 Lead Hazard Control Plan Appendix

The Lead Hazard Control Appendix shall address occupational exposure issues and shall describe the procedures to be followed to protect employees from lead hazards while performing lead hazard control activities. Each of the following elements shall be addressed in the lead hazard control appendix:

- a. The location and a brief description of each work activity that will emit lead into the workplace atmosphere. A description of any components containing lead shall be included and keyed to the project drawings.
- b. Description of equipment and materials, controls, crew size, worker responsibilities, and operating and maintenance procedures.
- c. Description and sketch of the Lead Hazard Control Areas, including decontamination areas.
- d. Description of the specific lead control methods and procedures to protect workers and other onsite contractors from lead exposure.
- e. Technologic equipment used to keep occupational exposure below the Permissible Exposure Limit and minimize worker exposure to lead (i.e., HEPA-filtered vacuum equipment/cleaners, special negative air enclosure equipment and supplies, etc.).
- f. Worker Exposure Assessment including methods and procedures to monitor and document worker exposure to lead. Worker exposure monitoring shall be broken into two parts in the plan. Part A:

Initial Determination. The Contractor shall describe worker monitoring (if performed for the "initial determination" described in 29 CFR 1926 (.62) (d). Monitoring for the initial determination may be omitted from the plan if the Contractor has sufficient proof from previous operations as specified in 29 CFR 1926 (.62) (d)(3)(iii) and (iv) that workers will not be exposed over the action level. The Contractor shall substitute objective proof of action level compliance in Part A if "initial determination" monitoring is omitted. Part B: Continued Exposure Monitoring. Worker exposure monitoring after the initial lead exposure determination has been made.

- g. Work Practices Program describing the protective clothing to be used to protect workers from lead exposure, house keeping procedures employed to minimize spread on lead contamination in the lead hazard control area, hygiene facilities and practices used to prevent workers from inadvertent ingestion of lead.
- h. Administrative Control Procedures, to be used as a last resort, to limit worker exposure to lead. The worker rotation schedule to be employed, should engineering or personal protective equipment precautions fail to be effective, shall be described. This element of the plan shall be omitted if administrative controls will not be used.
- i. Medical Surveillance practices and procedures used to monitor worker exposure to lead and to assure fitness for wearing respiratory protection devices.
- j. Worker training meeting the requirements of 29 CFR 1926 Sections (.62) and (.59) to assure workers understand hazard associated with working with lead and how to protect themselves.
- k. Security: [Twenty-four hour security guard] [Fenced and locked security area] [____] for each lead hazard control area. [A log book shall be kept documenting entry into and out of the lead hazard control area.] [Entry into lead hazard control areas shall only be by personnel authorized by the Contractor and the Contracting Officer.] Persons entering control areas shall be trained, medically evaluated, and equipped with personal protective equipment required for the specific control area to be entered.

1.7.1.2 Activity Hazard Analyses Appendix

An Activity Hazard Analysis (AHA) shall be prepared for each work task data element specified on the individual work task data element sheets at the end of this section. The AHA shall be submitted to the Contracting Officer prior to beginning specified work. Format shall be in accordance with EM 385-1-1, figure 1-1. The AHA shall be continuously reviewed and modified, when appropriate, to address changing conditions or operations. Each accepted AHA shall be appended to and become part of the APP.

1.7.1.3 Occupant/Building Protection Plan Appendix

The Contractor shall develop and implement an Occupant/Building Protection Plan describing the measures and management procedures to be taken during lead hazard control activities to protect the building occupants/building facilities (and future building occupants/facilities) from exposure to any

lead contamination while lead hazard control activities are performed.

1.7.1.4 Clearance Plan Appendix

The Contractor shall develop a Clearance Plan describing practices and procedures used to assure that lead hazard control activities are complete and that lead contamination within the lead hazard control area comply with final clearance levels or visual clearance criteria. Sampling and analysis procedures used to document project completion and clearance goals shall be explained in the Clearance Plan Appendix.

1.7.2 Lead Hazard Information Pamphlet Distribution

Prior to commencing lead hazard control activities, the Contractor shall provide owners/occupants who are affected by the project as defined in 40 CFR 745.Subpart E, the EPA 747-K-99-001. The pamphlet shall be provided in compliance with 40 CFR 745 (.80) through 40 CFR 745 (.88). The Contractor shall collect signatures from affected residents acknowledging they have been informed of planned lead hazard control activities.

1.8 PRE-CONSTRUCTION SAFETY CONFERENCE

1.8.1 Conference General Requirements

The Contractor and the QSHP shall attend a pre-construction safety conference prior to starting work. Items required to be submitted shall be reviewed for completeness, and where specified, for acceptance. Details of the APP shall be revised to correct any deficiencies, and resubmitted for acceptance. Onsite work shall not begin until the APP has been accepted, unless otherwise authorized by the Contracting Officer. One copy of the APP shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to personnel on the site. As work proceeds, the APP shall be adapted to new situations and conditions. Changes to the APP shall be made by the QSHP with acceptance by the Contracting Officer. Should an unforeseen hazard become evident during performance of the work, the QSHP shall inform the Contracting Officer, both verbally and in writing, for immediate resolution. In the interim, the QSHP shall take necessary action to re-establish and maintain safe working conditions; and to safeguard onsite personnel, visitors, the public, and the environment. Disregard for provisions of this specification, or the accepted APP, shall be cause for stopping of work until the matter is rectified.

1.8.2 Preparatory Inspection Meeting

The Contractor shall arrange and hold a preparatory inspection meeting to review completeness and adequacy of the APP immediately prior to beginning each phase of work.

1.9 MEDICAL SURVEILLANCE REQUIREMENTS

The Contractor shall comply with the following medical surveillance requirements:

- a. The Contractor shall make every attempt to keep occupational exposure to lead on this project below the action level of 30 micrograms/cubic meter defined in 29 CFR 1926 (.62). If it is not possible, and if occupational exposures could possibly exceed the action level for 30 or more days per year, the Contractor shall

institute a medical surveillance program. The program shall meet the examination frequency and content requirements specified in paragraph (j)(1), (j)(2) and (j)(3) of 29 CFR 1926 (.62). Medical removal as specified in paragraph (k) of 29 CFR 1926 (.62), if necessary, shall be at the Contractor's expense.

- b. Medical surveillance and biological monitoring shall be in compliance with 29 CFR 1926 (.62) (g) and (j). Initial biological monitoring shall be performed on lead hazard control workers prior to assignment to the project. Workers shall not be assigned to the project if results indicate a need for restricted activities.
- c. All lead hazard control workers shall pass the medical examinations necessary to be approved by the occupational physician to wear respiratory protection on this project. Occupational physician's approval shall be given prior to assignment to the project.

1.10 RESPIRATORY PROTECTION PROGRAM

The Contractor shall have a written respiratory protection program and shall be fully capable of implementing the requirement of the respiratory protection program on this project. The respiratory protection program shall meet the requirements of 29 CFR 1926 (.62) and 29 CFR 1910 (.134). Project specific respiratory protection requirements shall be included in the lead hazard control plan appendix of the Contractor's accident prevention plan.

1.11 LICENCES, PERMITS AND NOTIFICATIONS

The Contractor shall certify in writing to the [Regional Office of the EPA] [state's environmental protection agency responsible for lead hazard activities] [_____] [and the Contracting Officer] at least [10] [_____] days prior to the commencement of work that [_____] licenses, permits and notifications have been obtained. The Contractor is responsible for all associated fees or costs incurred in obtaining the licenses, permits and notifications.

1.12 TRAINING

1.12.1 OSHA Training Requirements

All Contractor personnel and/or subcontractors performing or responsible for onsite oversight of lead hazard control activities shall meet the following training requirements.

- a. Content of 29 CFR 1926 (.62) and its appendices.
- b. How operations could result in exposure over the action level.
- c. Purpose, selection, fitting, use and limitations of respirators.
- d. Purpose and description of the medical surveillance program.
- e. Use of engineering controls and good work practices to limit occupational exposure to lead.
- f. Implementation of the lead hazard control plan appendix of the accident prevention plan.

- g. Medical supervision for the use of chelating agents.
- h. Employee right of access to medical surveillance records as specified in 29 CFR 1910 (.20).

1.12.2 Qualified Safety and Health Professional

The qualified safety and health professional shall meet the training requirements in paragraph 1.12.1 and shall meet the training, experience and authority requirements in 29 CFR 1926 (.62) to be a competent person and be trained and have the experience and education to meet 40 CFR 745 Subpart L requirements to carry the following certifications:

- a. Certified Risk Assessor
- b. Certified Project Designer
- c. Certified Supervisor

1.12.3 Independent Risk Assessor

The independent risk assessor shall meet the training requirements in paragraph OSHA Training Requirements, above, and shall meet the training and experience requirements in 40 CFR 745 to carry certification as a certified risk assessor.

1.12.4 Abatement Worker

Workers shall meet the OSHA Training Requirements specified above and the training requirements in 40 CFR 745 Subpart L to carry certification as a Certified Worker, if required.

1.12.5 Training Program Certification

Training to meet 40 CFR 745 Subpart L requirements shall be provided by an EPA accredited training provider and the Contractor shall provide proof in the Qualifications and Organization Report showing that personnel have passed certification examinations for their respective disciplines, that fees for certification have been paid to the EPA (or to the state for state-run programs) and that EPA has certified the QSHP, independent risk assessor, certified workers to perform their duties.

1.13 SAMPLING AND ANALYSIS

1.13.1 Sampling and Analytical Procedures

1.13.1.1 Sampling and Analysis Methods

Analysis shall conform to [[NIOSH 84-100 Method 7082, Lead, for personal sampling required by 29 CFR 1926 (.62)] [ASTM E 1613]] Sampling shall conform to [[ASTM E 1553] [ASTM E 1741]].

1.13.1.2 Paint Chip Sampling and Analysis

[Sampling shall conform to ASTM E 1729] [Analysis shall conform to ASTM E 1613].

1.13.1.3 Dust Wipe Materials, Sampling and Analysis

Sampling shall conform to [[ASTM E 1792] [ASTM E 1728] [ASTM E 1644]]

[Analysis shall conform to ASTM E 1613].

1.13.1.4 Soil Sampling and Analysis

Sampling shall conform to [[ASTM E 1727] [ASTM E 1726]] [Analysis shall conform to ASTM E 1613].

1.13.2 Occupational Exposure Assessment

Sampling and analytical procedures to determine compliance with the occupational exposure monitoring requirement of this section shall be described in the lead hazard control plan appendix of the Contractor's accident prevention plan. Monitoring for the initial determination may be omitted if the Contractor has sufficient proof from previous operations as specified in 29 CFR 1926 (.62) (d)(3)(iii) and (iv) that workers will not be exposed over the action level. The following occupational exposure monitoring requirements apply and shall be implemented if the requirements of 29 CFR 1926 (.62)(d)(3) (iii) and (iv) cannot be demonstrated.

- a. During Initial Monitoring the Contractor shall representatively sample employees with the greatest potential for exposure to aerosolized lead.
- b. Continued/Additional Monitoring shall meet applicable paragraphs in 29 CFR 1926 (.62)(d)(6), Frequency, after the initial determination has been made.

1.13.3 Lead Hazard Control Area/Containment Monitoring

The Contractor shall perform a visual inspection once per day outside the lead hazard control area to assure visual clearance criteria are maintained while lead hazard control activities are performed. The Contractor shall clean at its own expense, and to the Contracting Officer's satisfaction, all contaminated surfaces outside the lead hazard control area, if surfaces fail visual clearance criteria.

1.13.4 Occupancy During Work

The Contractor shall wipe sample a floor surface at a location no more than 10 feet outside the lead hazard control area at a frequency of once per day while lead hazard control activities are being performed. Wipe sampling analytical results shall pass clearance criteria for floors specified in this contract. The Contractor shall clean all contaminated surfaces at its own expense and to the Contracting Officer's satisfaction, if floor wipe samples required in this paragraph fail clearance criteria.

1.13.5 Clearance Monitoring

Sampling and analytical procedures to determine the clearance requirements of this section shall be described by the Contractor in the Clearance Plan Appendix of the Accident Prevention Plan. The Contractor shall perform the following sampling and analysis to verify that clearance requirements for the contract (inside the lead hazard control) area have been met.

- a. The Contractor shall take dust wipe samples inside the lead hazard control area after the final visual inspection in the quantities and at the locations specified.

(1) Floors [_____].

- (2) Interior Window Sills [_____].
- (3) Window Troughs [_____].

b. The Contractor shall take exterior bare soil samples inside the lead hazard control area after the final visual inspection in the quantities and at the locations specified.

- (1) Near the building foundation [_____].
- (2) Nearby Play areas [_____].

1.13.6 Waste Disposal Sampling

The Contractor shall sample the following waste streams for TCLP analysis to determine waste disposal requirements.

- a. The Contractor shall take [_____] samples of building demolition debris.
- b. The Contractor shall take [_____] samples of paint chips.
- c. The Contractor shall take [_____] samples of paint residue from stripping (heat or chemical) operations.
- d. The Contractor shall take [_____] samples of soil.
- e. The Contractor shall take [_____] samples of settled dust in vacuum canisters.

1.13.7 Analytical Results

The Contractor shall develop and maintain during the course of the project a log of analytical results generated by the above sampling requirements. The log shall clearly describe the reason for which the sample was taken (worker exposure, migration control, clearance) the analytical result for each sample and evaluate if the analytical result passed or failed the action levels. At a minimum, the Contractor shall include analytical results for samples required to be taken in paragraphs Occupational Exposure Assessment, Lead Hazard Control Area/Containment Monitoring, Occupancy During Work, and Clearance Monitoring specified above.

1.14 CLEARANCE REQUIREMENTS

The Contractor shall describe clearance requirements for this project in the Clearance Plan Appendix of the Accident Prevention Plan.

- a. Clearance levels inside the lead hazard control area, target housing and child occupied facilities offered for sale:
 - (1) Floors [_____].
 - (2) Interior Window Sills [_____].
 - (3) Window wells [_____].
 - (4) Bare soils in play areas accessible by children [_____].
 - (5) Bare soils in all other areas [_____].
- b. Clearance levels inside the lead hazard control area, target housing and child occupied facilities, active installations:
 - (1) Floors [_____].
 - (2) Interior Window Sills [_____].

- (3) Window wells [____].
 - (4) Bare soils in play areas accessible by children [____].
 - (5) Bare soils in all other areas [____].
- c. Clearance levels inside lead hazard control area, public and commercial buildings:
- (1) Floors [____].
 - (2) Interior Window Sills [____].
 - (3) Interior Window Wells [____].
 - (4) Bare soils [____].
- d. Clear lead hazard control areas in industrial facilities: visual clearance criteria.

1.15 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Contractor shall describe the PPE to be used to protect workers from lead hazards in the Lead Hazard Control Plan Appendix of the Accident Prevention Plan. The Contractor shall furnish, at no cost to the workers, clothing for protection from lead-contaminated dust and debris. An adequate supply of these items shall be available for worker and Government personnel use. Protective clothing shall include:

- a. Coveralls : Full-body [moisture permeable (breathable)disposable] [reusable cotton or cotton/polyester blend] coveralls shall be provided to lead hazard control workers.
- b. Boots: Boots and shoes shall be provided as required by EM 385-1-1 Section 05.A.08 for workers. Boot/shoe covers shall be provided to prevent contamination of boots and shoes.
- c. Hand Protection: Gloves, etc., shall be provided as required by EM 385-1-1 Section 05.A.10 for workers.
- d. Head Protection: Hard hats shall be provided as required by 29 CFR 1910 (.135) and EM 385-1-1 Section 05.D for workers and authorized visitors.
- e. e. Eye and Face Protection: Eye and face protection shall be provided as required by 29 CFR 1910 (.133) and EM 385-1-1 Section 05.B for workers and authorized visitors.
- f. Respirators: NIOSH certified air-purifying respirators or filtering face pieces shall be provided for use as respiratory protection for airborne lead and for other hazardous airborne contaminants that may be encountered; as determine by the on-site safety and health supervisor. At a minimum, respirators shall be furnished to each employee required to enter a lead hazard control area where an employee exposure assessment has not yet been performed, or where monitoring data establishes the need for respiratory protection, or if requested by the employee.
- g. Respirator Cartridges/Filtering Face Pieces: Respirator cartridges shall be changed out/filtering face pieces properly disposed of when the they become sufficiently loaded with particulate matter that workers experience breathing resistance. Cartridges and filtering face pieces shall be N, R or P 100 rated to assure sufficient protection from lead exposure.

1.16 HYGIENE FACILITIES

The Contractor shall describe the personal hygiene facilities to be used by the workers in the Lead Hazard Control Plan Appendix of the Accident Prevention Plan. The Contractor shall provide hygiene facilities for lead hazard control workers. Hygiene facilities shall consist of the following:

1.16.1 Hand Wash Stations

The Contractor shall provide hand washing facilities for use by lead hazard control workers. Hand washing facilities shall comply with the requirements in 29 CFR 1926 (.51) (f). Faces and hands shall be washed when leaving the lead hazard control area and after each work-shift if showers are not provided.

1.16.2 Change Area

The Contractor shall provide a change area to workers. The change area shall be equipped so that contaminated work clothing and street clothes shall be stored separately to prevent cross contamination.

1.16.3 Showers

Showers shall be provided if feasible and if worker exposures exceed the PEL. When provided, showers facilities shall meet the requirements of 29 CFR 1926 (.51) (f).

1.16.4 Eating Area

The Contractor shall set aside an area or provide a room for taking breaks and eating lunch. This area shall be kept as free as practicable from lead contamination. Workers shall be required to follow the procedures in 29 CFR 1926 (.62) (i)(4) when using the room.

1.17 POSTED WARNINGS AND NOTICES

The following regulations, warnings, and notices shall be posted at the worksite in accordance with 29 CFR 1926 (.62).

1.17.1 Regulations

At least two copies of 29 CFR 1926 (.62) shall be made available for use by either the Contracting Officer or affected workers; and for the purpose of providing required information and training to the workers involved in the project. One copy shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to workers on the site.

1.17.2 Warning Signs and Labels

Warning signs shall be posted in each lead hazard control area where worker exposure to lead is undetermined or where the exposures are above the permissible exposure limit as defined in 29 CFR 1926 (.62). Signs shall be located to allow personnel to read the signs and take necessary precautions before entering the lead hazard control area.

1.17.2.1 Warning Signs

Warning signs shall be in [English] [and] [____], be of sufficient size to be clearly legible, and display the following:

WARNING
LEAD WORK AREA
POISON
NO SMOKING OR EATING

1.17.2.2 Warning Labels

Warning labels shall be affixed to all lead waste disposal containers used to hold materials, debris and other products contaminated with lead hazards; warning labels shall be in English [and] [____], and be of sufficient size to be clearly legible, and display the following:

CAUTION: CLOTHING CONTAMINATED WITH LEAD. DO NOT REMOVE DUST BY
BLOWING OR SHAKING. DISPOSE OF LEAD CONTAMINATED WASH WATER IN
ACCORDANCE WITH APPLICABLE FEDERAL, STATE OR LOCAL REGULATIONS.

1.17.3 Worker Information

Right-to-know notices shall be placed in clearly visible areas accessible to personnel on the site, to comply with Federal, state, and local regulations.

1.17.4 Air Monitoring Results

Air monitoring results shall be prepared so as to be easily understood by the workers. One copy shall be maintained in the Contractor's jobsite file, and a second copy shall be posted where it will be accessible to the workers as specified in 29 CFR 1926 (.62).

1.17.5 Emergency Telephone Numbers

A list of emergency telephone numbers shall be posted at the site. The list shall include numbers of the local hospital, emergency squad, police and fire departments, Government and Contractor representatives who can be reached 24 hours per day, and professional consultants directly involved in the project.

1.18 MATERIALS AND EQUIPMENT

Sufficient quantities of health and safety materials required by 29 CFR 1926 (.62), and other materials and equipment needed to complete the project, shall be available and kept on the site.

1.18.1 Abrasive Removal Equipment

The use of powered machine for vibrating, sanding, grinding, or abrasive blasting is prohibited unless equipped with local exhaust ventilation systems equipped with high efficiency particulate air (HEPA) filters.

1.18.2 Negative Air Pressure System

1.18.2.1 Minimum Requirements

Work shall not proceed in the area until containment is set up and HEPA

filtration systems are in place. The negative air pressure system shall meet the requirements of ANSI Z9.2 including approved HEPA filters per UL 586. Negative air pressure equipment shall be equipped with new HEPA filters, and shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Negative air pressure system minimum requirements are listed below:

- a. The unit shall be capable of delivering its rated volume of air with a clean first stage filter, an intermediate filter and a primary HEPA filter in place.
- b. The HEPA filter shall be certified as being capable of trapping and retaining mono-dispersed particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent.
- c. The unit shall be capable of continuing to deliver no less than 70 percent of rated capacity when the HEPA filter is 70 percent full or measures 2.5 inches of water static pressure differential on a magnehelic gauge.
- d. The unit shall be equipped with a manometer-type negative pressure differential monitor with minor scale division of 0.02 inch of water and accuracy within plus or minus 1.0 percent. The manometer shall be calibrated daily as recommended by the manufacturer.
- e. The unit shall be equipped with a means for the operator to easily interpret the readings in terms of the volumetric flow rate of air per minute moving through the machine at any given moment.
- f. The unit shall be equipped with an electronic mechanism that automatically shuts the machine off in the event of a filter breach or absence of a filter.
- g. The unit shall be equipped with an audible horn that sounds an alarm when the machine has shut itself off.
- h. The unit shall be equipped with an automatic safety mechanism that prevents a worker from improperly inserting the main HEPA filter.

1.18.2.2 Auxiliary Generator

An auxiliary generator shall be provided with capacity to power a minimum of 50 percent of the negative air machines at any time during the work. When power fails, the generator controls shall automatically start the generator and switch the negative air pressure system machines to generator power. The generator shall not present a carbon monoxide hazard to workers.

1.18.3 Vacuum Systems

Vacuum systems shall be suitably sized for the project, and filters shall be capable of trapping and retaining all mono-disperse particles as small as 0.3 micrometers at a minimum efficiency of 99.97 percent. Used filters that are being replaced shall be disposed in a proper manner.

1.18.4 Heat Blower Guns

Heat blower guns shall be flameless, electrical, paint-softener type with

controls to limit temperature to 1,100 degrees F. Heat blower shall be DI (non-grounded) 120 volts ac, and shall be equipped with cone, fan, glass protector and spoon reflector nozzles.

1.18.5 Chemical Paint Strippers

Chemical paint strippers shall not contain methylene chloride and shall be formulated to prevent stain, discoloration, or raising of the substrate materials.

1.18.6 Chemical Paint Stripper Neutralizer

Neutralizers for paint strippers shall be compatible with the substrate and suitable for use with the chemical stripper that has been applied to the surface.

1.18.7 Detergents and Cleaners

Detergents or cleaning agents used shall have demonstrated effectiveness in lead control work using cleaning techniques specified by HUD 6780 guidelines.

1.19 EXPENDABLE SUPPLIES

1.19.1 Polyethylene Bags

Disposable bags shall be polyethylene plastic and shall be a minimum of 6 mils thick (4 mils thick if double bags are used) or any other thick plastic material shown to demonstrate at least equivalent performance; and shall be capable of being made leak-tight. Leak-tight means that solids, liquids or dust cannot escape or spill out.

1.19.2 Polyethylene Leak-tight Wrapping

Wrapping used to wrap lead contaminated debris shall be polyethylene plastic that is a minimum of 6 mils thick or any other thick plastic material shown to demonstrate at least equivalent performance.

1.19.3 Polyethylene Sheeting

Sheeting shall be polyethylene plastic with a minimum thickness of 6 mil, or any other thick plastic material shown to demonstrate at least equivalent performance; and shall be provided in the largest sheet size reasonably accommodated by the project to minimize the number of seams. Where the project location constitutes an out of the ordinary potential for fire, or where unusual fire hazards cannot be eliminated, flame-resistant polyethylene sheets which conform to the requirements of NFPA 701 shall be provided.

1.19.4 Tape and Adhesive Spray

Tape and adhesive shall be capable of sealing joints between polyethylene sheets and for attachment of polyethylene sheets to adjacent surfaces. After dry application, tape or adhesive shall retain adhesion when exposed to wet conditions, including amended water. Tape shall be minimum 2 inches wide, industrial strength.

1.19.5 Containers

When used, containers shall be leak-tight and shall be labeled in accordance with EPA, DOT and OSHA standards, as specified in paragraph WARNING LABELS.

1.19.6 Chemicals

Chemicals, including caustics and paint strippers, shall be properly labeled, used in accordance with the manufacturers recommendations and stored in leak-tight containers. Material Safety Data Sheets (MSDSs) shall be provided and hazard communication procedures implemented in conformance with paragraph HAZARD COMMUNICATION PROGRAM.

1.20 STORAGE OF MATERIALS

Materials shall be stored protected from damage and contamination. During periods of cold weather, plastic materials shall be protected from the cold. Flammable or hazardous materials shall not be stored inside a building. Materials shall be regularly inspected to identify damaged or deteriorating items. Damaged or deteriorated items shall not be used and shall be removed from the site as soon as they are discovered. Stored materials shall not present a hazard or an inconvenience to workers, visitors, and/or other occupants and employees of the facility in which they are located.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 WORK PROCEDURES

The Contractor shall perform work following practices and procedures described accident prevention plan.

3.1.1 Lead Hazard Control Areas, Equipment and Procedures

The Contractor shall set up lead hazard control areas and operate equipment within the lead hazard control area in a manner that will minimize migration of lead dust beyond the lead hazard control area boundaries and minimize exposure to workers.

3.1.2 Lead Hazard Control Areas

Access into lead hazard control areas by the general public shall be prohibited. Workers entering the lead hazard control area shall meet medical surveillance requirements of this contract and shall be required to understand and follow procedures described in the Contractor's accident prevention plan for reducing lead exposure. Lead hazard control area preparation and restriction requirements follow:

- a. Containment features for interior lead hazard control projects:
[Polyethylene sheeting sealed with spray adhesive and duct tape.]
[Portable plastic partitions] [Colored caution tape] [_____] to designate the lead hazard control area. The floor in the lead hazard control area shall be covered with [two] [_____] layers of polyethylene sheeting. [The entry/exit shall be sealed with a primitive air lock] [Openings, such as HVAC supply and return air vents, into the lead hazard control area shall be sealed with polyethylene sheeting and duct tape or with sealed rigid coverings].

- b. Containment features for exterior lead hazard control projects:
[Plastic sheeting] [Portable partitions] [Colored caution tape]
[_____] [A roped-off boundary perimeter, using caution tape or a
barrier installed at [_____] distance from where the lead control
work is performed].

3.1.3 Negative Air Pressure System Containment

- a. The negative air pressure systems shall be operated to provide at least [10] [_____] air changes per hour inside the containment. The local exhaust unit equipment shall be operated continuously until the containment is removed. The negative air pressure system shall be smoke tested for leaks at the beginning of each shift. The OSHS is responsible to continuously monitor and keep a pressure differential log with an automatic manometric recording instrument. The Contracting Officer shall be notified immediately if the pressure differential falls below the prescribed minimum. The building ventilation system shall not be used as the local exhaust system for the lead hazard control area utilizing the negative air pressure system. The local exhaust system shall terminate out of doors unless the Contracting Officer allows an alternate arrangement. All filters shall be new at the beginning of the project and shall be periodically changed as necessary to maintain specified pressure differential and shall be disposed of as lead contaminated waste.
- b. Discontinuing Negative Air Pressure System. The negative air pressure system shall be operated continuously during lead hazard control work unless otherwise authorized by the Contracting Officer. At the completion of the project, units shall be run until full cleanup has been completed and final clearance testing requirements have been met. Dismantling of the negative air pressure systems shall [conform to written decontamination procedures] [be approved by the Contracting Officer] [be as presented in the Lead Hazard Control Plan]. The HEPA filter machine intakes shall be sealed with polyethylene to prevent environmental contamination.

3.2 USE OF HYGIENE FACILITIES

- a. Personnel and equipment shall be decontaminated when exiting the lead hazard control area. The Contractor shall comply with the following personnel and equipment decontamination procedures:
 - (1) HEPA vacuum outer garments and equipment.
 - (2) Wet Wipe Equipment.
 - (3) Remover outer layer of garments.
 - (4) Thoroughly wash face and hands, if showering not required.
 - (5) Shower (if applicable).
 - (6) Remove Respirator (if applicable).
 - (7) Exit lead hazard control area.
- b. The Contractor shall provide, and workers shall use, a change room to change into work clothing at the beginning of a work shift. At the end of the work shift workers shall change back into street clothing and leave contaminated work clothing at the site for disposal or laundering.

- c. The Contractor shall provide an eating facility as free as practical from lead contamination. Workers shall be allowed usage of the eating facility for rest/lunch breaks.

3.3 FURNISHINGS

The Contractor shall remove furniture and equipment from the work area before lead hazard control work begins.

3.4 WASTE DISPOSAL PROCEDURES

3.4.1 Construction Debris and/or Sanitary Landfill Waste

The Contractor shall dispose of the following waste streams in a [construction debris] [sanitary] landfill: [Building Demolition Debris] [Used Personal Protective Equipment] [Disposable material from containment structures].

3.4.2 Waste Stream Classification

The Contractor shall determine the RCRA waste classification for all waste streams generated by the lead hazard control project. The Contractor shall perform the sampling and analysis specified in paragraph WASTE DISPOSAL, evaluate analytical results and propose waste stream treatment and disposal requirements for the contract. The Contracting Officer will approve waste stream treatment and disposal requirements proposed by the Contractor.

3.4.3 RCRA Subtitle C Hazardous Waste

The Contractor shall dispose of the following waste streams at the RCRA subtitle C Treatment Storage and Disposal Facility or at the RCRA subtitle C hazardous wastes landfill: [Building demolition debris] [Dust and paint chips from HEPA vacuuming operations] [Paint sludge and residue from chemical or heat stripping procedures] [Lead contaminated soil].

3.4.4 Hazardous Waste Transportation and Disposal

The Contractor shall transport, treat and dispose of hazardous waste [in accordance with the requirements of Section 02120A TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS] [_____].

3.5 LEAD HAZARD CONTROL PROCEDURES, METHODS AND TECHNIQUES.

3.5.1 Encapsulation

The selection and use of liquid encapsulation products shall comply with ASTM E 1796.

3.5.1.1 Encapsulation with Non-Reinforced Liquid Coating

Non-reinforced liquid encapsulation coatings shall comply with ASTM E 1795.

3.5.1.2 Encapsulation with Reinforced Liquid Coating

Reinforced liquid encapsulation coatings shall comply with ASTM E 1797.

3.5.1.3 Encapsulation with Adhesively Bonded Systems

Surface preparation shall follow the selected manufacturer's surface

preparation recommendations. Loose paint shall be removed by wet scrapping. Adhesively bonded floor tile shall be installed according to manufacturer's directions. Manufacturer's adhesive recommendations shall be followed. Adhesively bonded covers that are used for encapsulation shall not be used for friction surfaces or on deteriorated components; i.e. rotten wood, rusted steel, spalled plaster, and masonry in need of re-pointing; severely deteriorated paint films; or on surfaces in which there is a known incompatibility between two existing coating layers.

3.5.1.4 Sheet Vinyl Systems

Sheet vinyl systems used to control lead hazards shall be built in accordance with the following requirements: [_____].

3.5.1.5 Vinyl Floor Tile

Vinyl floor tile used to control lead hazards shall conform to the following requirements: [_____].

3.5.2 Surface Refinishing

Treated surfaces shall be painted or otherwise sealed. Surfaces including walls, ceilings, and woodwork shall be coated with an appropriate primer and repainted. Surfaces enclosed with vinyl, aluminum coil stock, and other materials traditionally not painted shall be exempt from the repainting provision. Surfaces to be painted to control lead hazards shall be prepared and painted in accordance with the following requirements.

3.5.2.1 Painted Surfaces

Painted Surfaces shall be treated in accordance with [Section 09900 PAINTS AND COATINGS] [_____].

3.5.2.2 Finishes Other than Paint

Surfaces with a finish other than paint shall be treated in accordance with [Section 09900 PAINTS AND COATINGS] [_____].

3.5.3 Renovation, Remodeling and Building Component Replacement

Replacements for building components used to control lead hazards shall be provided and installed in accordance with the following paragraphs:

3.5.3.1 Baseboards, Casing Trim

[Section 06200A FINISH CARPENTRY] [_____].

3.5.3.2 Windows

Section [08550 WOOD WINDOWS] [08520A ALUMINUM AND ENVIRONMENTAL CONTROL ALUMINUM WINDOWS] [08510 STEEL WINDOWS] [_____].

3.5.3.3 Doors

Section [08210 WOOD DOORS] [08120 ALULMINUM DOORS AND FRAMES] [08110 STEEL DOORS AND FRAMES] [_____].

3.5.3.4 Carpentry

[Section 06100A ROUGH CARPENTRY] [____].

3.5.4 Enclosure Systems

Enclosure systems shall use rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the lead-based paint and the environment. Surfaces to be enclosed shall be labeled (behind the enclosure), horizontally and vertically, approximately every 2 feet with the warning:

DANGER: LEAD-BASED PAINT

A durable drawing of the property floor plan shall be mounted on a sturdy metal or wood base and affixed with screws to a wall in the utility room next to the electrical panel or at any other closed location easily accessible by maintenance personnel. The drawing shall be covered with plastic for protection. Enclosures shall be highlighted on the diagram and identified as hazardous. Enclosure systems shall be built in accordance with the following requirements [____] and requirements included in the following paragraphs.

3.5.4.1 Interior Gypsum Wallboard

[Section 09250 GYPSUM BOARD] [____].

3.5.4.2 Interior Plaster

Section [09200A LATHING AND PLASTERING] [09215A VENEER PLASTER] [____].

3.5.4.3 Interior Wood Paneling

[Section 06200A FINISH CARPENTRY] [____].

3.5.4.4 Interior Tile

[Section 09310A CERAMIC TILE] [____].

3.5.4.5 Flooring Underlayment

[Section 06100A ROUGH CARPENTRY] [____].

3.5.4.6 Exterior Wood Siding

[Section 06200A FINISH CARPENTRY] [____].

3.5.4.7 Exterior Masonry

Section [04200A MASONRY] [04220A NONBEARING MASONRY VENEER/STEEL STUD WALLS] [04900 RESTORATION AND CLEANING OF MASONRY IN HISTORIC STRUCTURES] [____].

3.5.4.8 Exterior Stucco, Insulation and Finish

Section [09225A STUCCO] [07240 EXTERIOR INSULATION AND FINISH SYSTEMS] [____].

3.5.4.9 Exterior Vinyl Siding

[Section 06200A FINISH CARPENTRY] [____].

3.5.4.10 Metal Siding

[Section 07413A METAL SIDING] [____].

3.5.5 Paint Removal Methods

Prohibited paint removal methods shall include: open flame burning or torching, including the use of heat guns having operating temperatures greater than 1,100 degrees F; machine sanding or grinding without HEPA exhaust; non-contained hydro blasting or high-pressure water wash; abrasive blasting or sandblasting without HEPA exhaust; dry scraping, except near electrical outlets or when using a heat gun. Chemical paint removers containing methylene chloride are prohibited. Building components and structures adjacent to the removal process shall be appropriately protected from damage due to the removal process employed. Stripping shall be done according to manufacturer's recommendations. Stripped substrates shall be thoroughly washed and neutralized before applying a primer or sealing coat.

3.5.5.1 Low Temperature Heat Gun

Prior to beginning work, electrical fuses and adequate electrical supply shall be verified. Only fuses properly sized for the service, and otherwise permitted by code, shall be used. Properly sized fuses shall not be changed out with larger fuses to increase amperage beyond safe limits. Portable electric generators may be used to safely supply adequate amperage. An accessible garden hose with a pressure-release spray nozzle; a crowbar to remove smoldering wood; and a long-handled sledgehammer to open up walls exposed to smoldering insulation shall be readily available. A fully charged ABC-type (20 pound minimum) fire extinguisher shall be available within 100 feet of the work area. Adequate ventilation shall be provided for the work area. Worker protection shall include respirators equipped with combination HEPA filter/organic vapor cartridges. The Contractor shall equip heat guns with extension tubes or wire mesh as needed to prevent premature burnout of the heating elements and to minimize paint film scorching or smoking. Optimal heat gun/substrate separation is typically 3 to 6 inches.

3.5.5.2 HEPA Sanding

The HEPA vacuum shall be correctly sized to provide adequate airflow, permitting the system to operate properly. If longer exhaust hoses are used, a larger HEPA vacuum shall be provided to handle the extra pressure drop in the vacuum hose. The HEPA filter shall be operated in accordance with manufacturer's instructions. Worker protection shall include respirators or filtering facepieces equipped with HEPA filters.

3.5.5.3 Wet Scraping

Surfaces near electrical outlets shall not be moistened but shall be dry scraped only. Loose material shall be scraped from the surface and deposited onto the containment plastic. Damp scrapings shall be cleaned up as soon as possible to prevent tracking throughout the work area. Scraper blades shall be kept sharp. Additional scraper blades shall be supplied and shall be selected for the type of surface being scraped.

3.5.5.4 HEPA Vacuum Blasting

The blast head shall be shrouded under a vacuum and exhaust passed through

a HEPA filter. The blast head shall remain in continuous contact with the surface to avoid dispersal of both the blast medium and particulate. The equipment shall be equipped [with a device that separates the blast media from the material to be removed, effectively recycling the blast material and minimizing the amount of waste] [_____]. Work shall be positioned to minimize the degree workers must reach above shoulder level, in order to minimize worker fatigue and loss of blast head contact with the surface.

3.5.5.5 HEPA Vacuum Needle Gun

The vacuum needle gun head shall be equipped with a vacuum shroud designed for the surface to be treated. The needle gun shall be operated to maximize surface contact of the vacuum shroud. Work shall be positioned to minimize the degree workers must reach above shoulder level, in order to minimize worker fatigue and loss of needle gun contact with the surface.

3.5.5.6 Offsite Paint Removal

Building components to be stripped shall be removed using removal techniques that minimize the amount of airborne dust generated. The painted seams between walls and the components shall be cut with a utility razor knife to minimize wall damage. If more than one component is to be removed and stripped, the labeling of each component for eventual reinstallation shall utilize a punch system. The identifying punches shall be made in an obscure location on the component. Once removed, the component shall be wrapped and sealed as specified for transport. Stripped components shall be thoroughly washed and neutralized after stripping. Stripped components shall be restored to structural soundness after stripping, if necessary; and shall be cleaned using standard HEPA vacuum/wet wash/HEPA vacuum cycle, dried, and pH neutralized before repainting.

3.5.5.7 Onsite Paint Removal

Paint remover shall be applied in accordance with the manufacturer's instructions. Outdoor application shall only be performed in weather conditions recommended by the manufacturer. The work area surrounding the application process shall be secured to prevent access by children and unauthorized personnel. Workers shall be provided with the appropriate personal protective clothing and equipment in accordance with manufacturer's recommendations and good industrial hygiene practice. A portable eyewash shall be provided whenever eye irritant strippers are used. An abundant source of running water shall be provided in the work area. The stripper shall be tested in a small area prior to full scale stripping. Caustic strippers shall not be used on aluminum or glass surfaces. Waste disposal shall be in accordance with paragraph WASTE DISPOSAL PROCEDURES. Stripped surfaces shall be neutralized and washed in accordance with manufacturer's instructions and paragraph CHEMICAL PAINT STRIPPER NEUTRALIZER. Stripped surfaces shall be completely dry before repainting, and shall be repainted only with paints proven compatible with the stripping techniques employed.

3.5.6 Lead Hazard Soil Barriers and Controls

Soil barriers to control lead hazards shall be built in accordance with the following requirements [_____] and the requirements and specifications included in the following paragraphs:

3.5.6.1 Soil Removal and Replacement

Section [02111 EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL] [02315A EXCAVATION, FILLING AND BACKFILLING FOR BUILDINGS] [_____].

3.5.6.2 Soil Cultivation (Rototilling)

[_____].

3.5.6.3 Soil Treatment and Replacement

Section [02151A SOIL WASHING THROUGH SEPARATION/SOLUBILIZATION] [02160A SOLIDIFICATION/STABILIZATION (S/S) OF CONTAMINATED MATERIAL] [_____].

3.5.6.4 Paving with Concrete or Asphalt

Section [02753A CONCRETE PAVEMENT FOR AIRFIELDS AND OTHER HEAVY-DUTY PAVEMENTS] [02754A CONCRETE PAVEMENTS FOR SMALL PROJECTS] [02741A HOT-MIX ASPHALT (HMA) FOR ROADS] [_____].

3.5.6.5 Removing Exterior Surface Lead-Contaminated Debris

Section [02220A DEMOLITION] [02120A TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS] [_____].

3.6 CLEARANCE PROCEDURES

3.6.1 Visual Inspection

QSHP shall perform a visual inspection, using the form at the end of this section, for each lead hazard control area to assure that lead hazard control activities, identified in the individual work task data elements, have been properly completed. The QSHP shall visually verify that lead hazards have been removed, control technology has been appropriately applied/installed and that the lead hazard control area is free of dust and paint chips generated by lead hazard control activities.

3.6.2 Analytical Demonstration of Clearance

After the visual inspection the [QSHP] [independent risk assessor] shall take clearance samples for laboratory analysis to verify clearance requirements specified in paragraph CLEARANCE REQUIREMENTS have been met.

3.7 EVALUATION OF SAMPLING AND MONITORING RESULTS

Analytical results from samples taken during lead hazard control activities shall be evaluated to determine compliance with occupational safety and health standards and project specific control efficiency and clearance/clean up levels.

3.7.1 Occupational Safety and Health

The QSHP shall review the analytical results from samples taken for the initial exposure assessment and continued occupational safety and health monitoring if required. Effectiveness and adequacy of personal protective equipment, respirators, work practices, hygiene facilities and personal decontamination procedures shall be evaluated and upgrades/downgrades in equipment and procedures made. After notifying the Contracting Officer the following shall be applied:

- a. Exposures over the PEL (0.05 mg/cubic meter):
 - (1) Improve work practices to reduce exposures.
 - (2) Don respirators.
 - (3) Assure eating facilities and change rooms are clean and are free from settled dust.
 - (4) Shower as part of personal decontamination.
- b. Exposures over the Action Level (0.03 mg/cubic meter):
 - (1) Assure exposed individuals enrolled in the medical surveillance program.
 - (2) Assure exposed individuals enrolled in and up to date with lead exposure training requirements.

3.7.2 Control Efficiency of Containment Features

The QSHP shall review and document results of the visual inspection determining visual clearance criteria are being met while lead hazard control activities are being performed. The QSHP shall review analytical results from samples taken to determine if lead is migrating outside lead hazard control areas at levels in excess of clearance criteria. The QSHP shall notify the Contracting Officer and apply the following actions if results exceed project specific clearance levels outside the lead hazard control area:

- a. Require/improve containment.
- b. Improve work practices to reduce lead aerosol generation.

3.7.3 Clearance

The QSHP shall review analytical results for the samples taken to determine compliance with project specific clearance requirements. The following actions apply and shall be performed at the Contractor's expense if project specific clearance levels are exceeded:

- Reclean surfaces.
- Retest to determine clearance.

3.7.4 Removal of Lead Hazard Control Area

Upon acceptance of the final clearance certification by the Contracting Officer, and when authorized, cleared Lead Hazard Control Area boundary controls and warning signs shall be removed.

3.8 CLEARANCE REPORT

The QSHP shall prepare a clearance report including the following information:

- a. Start and completion dates of lead hazard control activities.
- b. Type of lead hazard control activity performed (i.e., abatement, interim control, renovation, remodeling), locations and lead

hazards controlled or abated.

- c. The name and address of each firm conducting lead hazard control activities and the name of each supervisor assigned to the project.
- d. The Occupant Protection Plan prepared pursuant to paragraph OCCUPANT PROTECTION PLAN.
- e. The name, address and signature of the QSHP or independent risk assessor to indicate clearance requirements have been met.
- f. Certification of each Final Cleaning and Visual Inspection performed by the QSHP.
- g. Analytical results from clearance sampling performed by the QSHP or independent risk assessor, the name of the laboratory that conducted the analysis. Results shall be provided in both the laboratory report and on the appropriate example forms provided at the end of this section.
- h. A detailed written description of the lead hazard control activities performed, including hazard control methods used, locations of rooms and/or components where lead hazard control activities occurred, reason for selecting particular hazard control methods for each component, and any suggested monitoring of encapsulants or enclosures.
- i. Hazardous waste disposal documentation.
- j. Contractor provided installation/maintenance manuals.

3.9 TITLE TO MATERIALS

Materials resulting from demolition work, except as specified otherwise, shall be come the property of the Contractor, and shall be disposed of in accordance with Section 02220A DEMOLITION, except as specified.

3.10 PAYMENT FOR HAZARDOUS WASTE

Payment for disposal of hazardous waste will not be made until a signed copy of the manifest from the treatment or disposal facility certifying the amount of lead-containing materials delivered is returned and a copy is furnished to the Government.

3.11 CERTIFICATION OF VISUAL INSPECTION

Certify that the lead hazard control areas(s) for each individual work task data elements have passed visual clearance criteria and are ready for clearance sampling. To pass visual clearance, lead hazards have to be removed; control technology appropriately applied/installed; the lead hazard control area must be free from visible dust debris, paint chips or any other residue that may have been generated by the lead hazard control activities.

Signature by the QSHP indicates that the described lead hazard control area(s) have passed visual clearance criteria. Provide detailed description of each Lead Hazard Control Area.

BY: _____
QSHP Date

Print name and title _____

CONTRACTING OFFICER ACCEPTANCE OR REJECTION

The Contracting Officer hereby determines that the Contractor has performed visual inspection of the lead hazard control area and by quality assurance inspection, finds the Contractor's work to be:

_____ Acceptable, ready for performance of clearance sampling

_____ Unacceptable, Contractor instructed to re-clean the lead hazard control area

BY: Contracting Officer's Representative

Signature _____ Date

Print name and title _____

Lead Hazard Control Clearance Sampling Certification Form

Date _____

Name of QSHP or Certified Risk Assessor _____

License No. _____

Work Task Data Element _____

Clearance Levels _____

40 CFR 745 Clearance Levels

24 CFR 35 Clearance Levels

Sample quantity and location:

Windows _____

Floors _____

Exterior Soils _____

Date of sample collection _____ Date Shipped to lab _____

Shipped by _____
Signature

I certify that the clearance samples taken meet the clearance sampling requirements of this contract.

By: _____ Date: _____
QSHP or independent risk assessor

Print name and Title: _____

CONTRACTING OFFICER ACCEPTANCE OR REJECTION

I have inspected sampling locations and procedures and have found them to be
_____ Acceptable, meet contract requirements.

_____ Unacceptable, do not meet contract requirements, Contractor is directed to resample.

By: Contracting Officer's Representative

Signature _____ Date _____

Print Name and Title _____

INDIVIDUAL WORK TASK DATA ELEMENTS

Sheet _____ of _____

There is a separate data sheet for each individual work task.

WORK TASK DESIGNATION NUMBER: _____

2. LOCATION OF WORK TASK:

3. BRIEF DESCRIPTION OF THE LEAD HAZARD CONTROL ACTIVITY:

4. POST LEAD HAZARD CONTROL BUILDING/FACILITY USE: [TARGET HOUSING/CHILD OCCUPIED FACILITY OFFERED FOR SALE] [TARGET HOUSING/CHILD OCCUPIED ACTIVE FACILITY] [COMMERCIAL/PUBLIC] [INDUSTRIAL]

5. LEAD CONTAMINATED DEBRIS DISPOSAL DESTINATION: [Construction Debris/Sanitary] [RCRA subtitle C Treatments Storage and Disposal Landfill] [RCRA subtitle C Landfill]

6. CLEARANCE REQUIREMENTS: [40 CFR 745] [24 CFR 35] [VISUAL]

-- End of Section --

13286N

HANDLING OF LIGHTING BALLASTS AND LAMPS CONTAINING PCBs AND MERCURY

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.1000	Air Contaminants
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal FacilitiesRef Title
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Program
40 CFR 273	Standards For Universal Waste Management
40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use ProhibitionsRef Title
49 CFR 178	Shipping Container Specification

STATE OF VIRGINIA ADMINISTRATIVE CODE (VAC)

9 VAC 20-60	Hazardous Waste Regulations
9 VAC 20-80	Solid Waste Management Regulations

1.2 REQUIREMENTS

Removal and disposal of PCB containing lighting ballasts and associated mercury-containing lamps. Contractor may encounter leaking PCB ballasts.

1.3 DEFINITIONS

1.3.1 Certified Industrial Hygienist (CIH)

A industrial hygienist hired by the contractor shall be certified by the American Board of Industrial Hygiene.

1.3.2 Leak

Leak or leaking means any instance in which a PCB article, PCB container, or PCB equipment has any PCBs on any portion of its external surface.

1.3.3 Lamps

Lamp, also referred to as "universal waste lamp", is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.

1.3.4 Polychlorinated Biphenyls (PCBs)

PCBs as used in this specification shall mean the same as PCBs, PCB containing lighting ballast, and PCB container, as defined in 40 CFR 761, Section 3, Definitions.

1.3.5 Spill

Spill means both intentional and unintentional spills, leaks, and other uncontrolled discharges when the release results in any quantity of PCBs running off or about to run off the external surface of the equipment or other PCB source, as well as the contamination resulting from those releases.

1.3.6 Universal Waste

Universal Waste means any of the following hazardous wastes that are managed under the universal waste requirements 40 CFR 273:

- (1) Batteries as described in Sec. 273.2 of this chapter;
- (2) Pesticides as described in Sec. 273.3 of this chapter;
- (3) Thermostats as described in Sec. 273.4 of this chapter; and
- (4) Lamps as described in Sec. 273.5 of this chapter.

1.4 QUALITY ASSURANCE

1.4.1 Regulatory Requirements

Perform PCB related work in accordance with 40 CFR 761 and 9 VAC 20-60 and 9 VAC 20-80. Perform mercury-containing lamps storage and transport in accordance with 40 CFR 261, 40 CFR 264, 40 CFR 265, 40 CFR 273 and 9 VAC 20-60 and 9 VAC 20-80.

1.4.2 Training

Certified industrial hygienist (CIH) shall instruct and certify the training of all persons involved in the removal of PCB containing lighting ballasts and mercury-containing lamps. The instruction shall include: The

dangers of PCB and mercury exposure, decontamination, safe work practices, and applicable OSHA and EPA regulations. The CIH shall review and approve the PCB and Mercury-Containing Lamp Removal Work Plans.

1.4.3 Regulation Documents

Maintain at all times one copy each at the office and one copy each in view at the job site of 29 CFR 1910.1000, 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 265, 40 CFR 268, 40 CFR 270, 40 CFR 273 and 9 VAC 20-60 9 VAC 20-80 and of the Contractor removal work plan and disposal plan for PCB and for associated mercury-containing lamps.

1.5 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-07 Certificates

Qualifications of CIH; G

Training Certification; G

PCB and Lamp Removal Work Plan; G

PCB and Lamp Disposal Plan; G

SD-11 Closeout Submittals

Transporter certification of notification to EPA of their PCB waste activities and EPA ID numbers; G

Certification of Decontamination

Certificate of Disposal and/or recycling. Submit to the Government before application for payment within 30 days of the date that the disposal of the PCB and mercury-containing lamp waste identified on the manifest was completed.

DD Form 1348-1

[Testing results]

1.6 ENVIRONMENTAL REQUIREMENTS

Use special clothing:

- a. Disposable gloves (polyethylene)
- b. Eye protection
- c. PPE as required by CIH

1.7 SCHEDULING

Notify the Contracting Officer 20 days prior to the start of PCB and mercury-containing lamp removal work.

1.8 QUALITY ASSURANCE

1.8.1 Qualifications of CIH

Submit the name, address, and telephone number of the Industrial Hygienist selected to perform the duties in paragraph entitled "Certified Industrial Hygienist." Submit training certification that the Industrial Hygienist is certified, including certification number and date of certification or re certification.

1.8.2 PCB and Lamp Removal Work Plan

Submit a job-specific plan within 20 calendar days after award of contract of the work procedures to be used in the removal, packaging, and storage of PCB-containing lighting ballasts and associated mercury-containing lamps. Include in the plan: Requirements for Personal Protective Equipment (PPE), spill cleanup procedures and equipment, eating, smoking and restroom procedures. The plan shall be approved and signed by the Certified Industrial Hygienist. Obtain approval of the plan by the Contracting Officer prior to the start of PCB and/or lamp removal work.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 WORK PROCEDURE

Furnish labor, materials, services, and equipment necessary for the removal of PCB containing lighting ballasts, associated mercury-containing fluorescent lamps, [and high intensity discharge (HID) lamps] in accordance with local, state, or federal regulations. Do not expose PCBs to open flames or other high temperature sources since toxic decomposition by-products may be produced. Do not brake mercury containing fluorescent lamps or high intensity discharge lamps.

3.1.1 Work Operations

Ensure that work operations or processes involving PCB or PCB-contaminated materials are conducted in accordance with 40 CFR 761, 40 CFR 262 40 CFR 263, and the applicable requirements of this section, including but not limited to:

- a. Obtaining suitable PCB and mercury-containing lamp storage sites.
- b. Notifying Contracting Officer prior to commencing the operation.
- c. Reporting leaks and spills to the Contracting Officer.
- d. Cleaning up spills.
- e. Inspecting PCB and PCB-contaminated items and waste containers for leaks and forwarding copies of inspection reports to the Contracting Officer.
- f. Maintaining inspection, inventory and spill records.

3.2 PCB SPILL CLEANUP REQUIREMENTS

3.2.1 PCB Spills

Immediately report to the Contracting Officer any PCB spills.

3.2.2 PCB Spill Control Area

Rope off an area around the edges of a PCB leak or spill and post a "PCB Spill Authorized Personnel Only" caution sign. Immediately transfer leaking items to a drip pan or other container.

3.2.3 PCB Spill Cleanup

40 CFR 761, subpart G. Initiate cleanup of spills as soon as possible, but no later than 24 hours of its discovery. Mop up the liquid with rags or other conventional absorbent. The spent absorbent shall be properly contained and disposed of as solid PCB waste.

3.2.4 Records and Certification

Document the cleanup with records of decontamination in accordance with 40 CFR 761, Section 125, Requirements for PCB Spill Cleanup. Provide test results of cleanup and certification of decontamination.

3.3 REMOVAL

3.3.1 Ballasts

As ballast are removed from the lighting fixture, inspect label on ballast. Ballasts without a "No PCB" label shall be assumed to contain PCBs and containerized and disposed of as required under paragraphs STORAGE FOR DISPOSAL and DISPOSAL. If there are less than 1600 "No PCB" labeled lighting ballasts dispose of them as normal demolition debris. If there are more than 1600 "No PCB" labeled ballasts, establish whether the "No PCB" labeled ballasts contain diethylhexyl phthalate (DEHP) either by test or by checking with the ballast manufacturer indicated on the label. Submit testing results and/or written confirmation from the manufacturer to the Contracting Officer. If the ballasts do not contain DEHP, dispose of them as normal construction debris. If they do contain DEHP, dispose of them as hazardous material in accordance with Federal, State, and local regulations. As a basis of bid assume ballasts with "No PCB" labels do not contain DEHP and may be disposed of as normal construction debris. If 1600 or more DEHP ballasts are disposed of in a 24 hour period, notify the National Response Team at 800-424-8802.

3.3.2 Lighting Lamps

Remove lighting tubes/lamps from the lighting fixture and carefully place (unbroken) into appropriate containers (original transport boxes or equivalent). In the event of a lighting tube/lamp breaking, sweep and place waste in double plastic taped bags and dispose of as universal waste as specified herein.

3.4 STORAGE FOR DISPOSAL

3.4.1 Storage Containers for PCBs

49 CFR 178. Store PCB in containers approved by DOT for PCB.

3.4.2 Storage Containers for lamps

Store mercury containing lamps in appropriate DOT containers. The boxes shall be stored and labeled for transport in accordance with 40 CFR 273.

3.4.3 Labeling of Waste Containers

Label with the following:

- a. Date the item was placed in storage and the name of the cognizant activity/building.
- b. "Caution Contains PCB," conforming to 40 CFR 761, CFR Subpart C. Affix labels to PCB waste containers.
- c. Label mercury-containing lamp waste in accordance with 40 CFR 273. Affix labels to all lighting waste containers.

3.5 DISPOSAL

3.5.1 Disposal by the Government

3.5.1 Government Pick Up

Contact Ft Pickett Environmental Office at least 5 working days in advance to make arrangements for pick up of PCB waste and universal waste by the Government. Procedures for Waste Packaging, temporary storage, and Government Pick Up procedures will be discussed in detail at the demolition phase preparatory inspection.

3.5.2 DD Form 1348-1

Prepare DD Form 1348-1 Turn-in Document (TID), which will accompany the PCB to the storage site. Ensure that a responsible person from the activity that owns the PCB signs the DD Form 1348-1.

-- End of Section --